

Appendix G

Murphy Ranch Road Residential

Transportation Impact Analysis

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Executive Summary

This report presents the results of the traffic impact analysis conducted for the proposed Murphy Ranch Road residential development in Milpitas, California. The site is currently vacant. The project as proposed would consist of 659 residential units (285 multi-family dwelling units and 374 apartments). Access to the site will be provided via Murphy Ranch Road and Technology Drive. Parking would be provided onsite. The proposed project would require a change in the existing General Plan designation of the project site from Industrial to Residential.

The potential impacts of the project were evaluated in accordance with the standards set forth by the City of Milpitas and the Congestion Management Program (CMP) of Santa Clara County. The study included an analysis of AM and PM peak-hour traffic conditions for 19 signalized intersections, 4 unsignalized intersections, and 10 directional freeway segments in the vicinity of the project site.

Project Trip Generation and Distribution

The magnitude of traffic generated by the proposed project was estimated by applying to the size of the development the applicable trip generation rates. On the basis of the trip generation rates recommended by the San Diego Association of Governments (SANDAG), it is estimated that the project would generate 362 trips during the AM peak hour and 430 trips during the PM peak hour. The trip distribution pattern for the proposed project was based on existing travel patterns and the locations of complementary land uses.

Intersection Impacts and Mitigation

Project impacts were determined based on the appropriate significance criteria. The results of the intersection level of service analysis show one of the signalized study intersections would be impacted by the project (see Table ES-1).

Significant Impact: The intersection of McCarthy Boulevard/Tasman Drive would operate at LOS D under background conditions. Under project conditions it would operate at LOS E. According to the City of Milpitas guidelines, this would constitute a significant impact.

Mitigation: To mitigate this impact, southbound McCarthy Boulevard would need to be re-stripped from the existing two left-turn lanes, one through lane, and one shared right/through lane to two left-turn lanes, one through lane, and one right-turn lane. An overlap phase for the southbound right turn movement would also be included. This mitigation measure would allow the intersection to operate at LOS D during the AM peak hour and LOS C during the PM peak hour.

Project Freeway Segment Impacts

Traffic volumes on the study freeway segments under project conditions were estimated by adding project trips to the existing volumes obtained from the 2004 CMP Annual Monitoring Report. The results show that the project would not cause a significant increase in traffic volume (more than one percent of capacity) on any of the study freeway segments.

North San Jose Deficiency Plan Impacts

The impacts of the proposed project also were evaluated using the North San Jose Plan (NSJDP) criteria. To remain consistent with NSJDP methods, only San Jose's approved trips were used in the background condition calculation. Under background conditions, the 22-intersection average delay was 77 seconds using TRAFFIX software. With the addition of project traffic, the 22-intersection average would remain at 77 seconds. According to the NSJDP impact criteria, the proposed development would not impact North San Jose, and therefore, mitigation would not be required.

Signal Warrant Impacts

The peak-hour signal warrant was checked for the four unsignalized intersections to determine whether signalization would be justified on the basis of project peak-hour volumes. The analysis showed that under project conditions the intersection of McCarthy Boulevard and Murphy Ranch Road would meet the signal warrant during the PM peak hour. The other three unsignalized study intersections do not meet the peak-hour volume warrant.

The two primary unsignalized intersections that project traffic would use to access McCarthy Boulevard are Murphy Ranch Road/McCarthy Boulevard and Sumac Drive/McCarthy Boulevard. Under project conditions, the traffic volume on Sumac Drive would not be sufficient to warrant a traffic signal. However, the minor street approach is projected to operate at a poor LOS. The intersection of Murphy Ranch Road/McCarthy Boulevard would warrant a signal during the PM peak hour. Given the number of vehicle trips at the subject intersections and the layout of the street network, only one traffic signal would be necessary. Since a traffic signal already exists to the north of the project site at Technology Drive/McCarthy Boulevard, it is recommended that a traffic signal be installed at the intersection of Murphy Ranch Road/McCarthy Boulevard to facilitate project access to the south.

Year 2030 Cumulative Traffic Impacts

The proposed project would require a General Plan amendment (GPA). GPA conditions were evaluated relative to the existing General Plan in order to determine potential impacts. According to City of Milpitas and CMP standards, the proposed GPA would not create any adverse significant impacts.

The proposed GPA would have a beneficial impact on *eight* roadway segments during the AM and PM peak hours. Thus, the proposed GPA would predominately benefit overall traffic operations in the area relative to the existing general plan. This is primarily because the residential trips generated by the GPA would be located in close proximity to the surrounding employment uses, thereby shortening trips for commuters.

In the past, the City of Milpitas has required development projects that would contribute traffic on regional roadways such as Calaveras Boulevard and Montague Expressway contribute monetarily to planned improvements. For the planned Montague Expressway improvements, the City has adopted a fee program for properties located in the Milpitas Business Park. For the planned improvements to Calaveras Boulevard, the City does not have an adopted development fee program, but has been collecting new development contributions towards improvements as mitigation for significant impacts. Monetary contributions are typically calculated based on the number of project trips added to a roadway and the cost of the planned improvements. The proposed project would contribute traffic to Calaveras Boulevard and Montague Expressway, and therefore, would likely be required by the City to make “fair share” contributions towards the planned improvements.

Table ES 1
Intersection Level of Service Summary

Intersection	Peak Hour	Count Date	Existing			Background			Project Conditions		
			Ave.	Delay	LOS	Ave.	Delay	LOS	Ave.	Delay	LOS
McCarthy Blvd and Ranch Dr (N)	AM	11/29/005	6.6		A	18.7		B	18.7		B
	PM	11/29/005	10.8		B	20.2		C	20.2		C
McCarthy Blvd and Ranch Dr (S)	AM	5/24/05	16.8		B	19.2		B	19.3		B
	PM	5/24/05	22.7		C	43.1		D	44.1		D
Abel St and SR 237 (Calaveras Blvd)*	AM	10/6/04	37.3		D	43.1		D	43.3		D
	PM	5/26/05	38.2		D	61.7		E	62.2		E
Milpitas Blvd and SR 237 (Calaveras Blvd)*	AM	10/6/04	55.8		E	82.3		F	82.9		F
	PM	5/26/05	40.0		D	41.9		D	42.2		D
McCarthy Blvd and Bellew Dr	AM	5/24/05	19.0		B	27.5		C	28.9		C
	PM	5/24/05	33.6		C	50.9		D	54.8		D
McCarthy Blvd and Alder Dr	AM	11/17/05	11.6		B	15.5		B	15.2		B
	PM	11/17/05	16.7		B	53.2		D	54.2		D
I-880 NB and Great Mall Pkwy	AM	5/12/05	24.6		C	44.4		D	45.1		D
	PM	5/12/05	19.3		B	29.1		C	29.2		C
I-880 SB and Tasman Dr	AM	5/12/05	13.6		B	22.7		C	22.9		C
	PM	5/12/05	13.1		B	27.1		C	27.3		C
McCarthy Blvd and Tasman Dr	AM	5/12/05	31.9		C	53.1		D	57.9		E
	PM	5/12/05	24.6		C	35.5		D	36.8		D
Alder Dr and Tasman Dr	AM	5/12/05	14.9		B	21.4		C	21.7		C
	PM	5/12/05	36.9		D	131.9		F	132.9		F
McCarthy Blvd/O'Toole and Montague Expwy*	AM	5/12/05	41.9		D	59.5		E	60.7		E
	PM	10/10/04	60.5		E	133.6		F	137.4		F
McCarthy Blvd and Barber Ln	AM	11/15/05	9.8		A	9.6		A	9.7		A
	PM	11/15/05	19.7		B	20.6		C	20.8		C
McCarthy Blvd and Cottonwood Dr	AM	11/15/05	13.0		B	15.4		B	15.6		B
	PM	11/15/05	15.5		B	16.1		B	16.4		B
McCarthy Blvd and Sycamore Dr	AM	11/15/05	10.6		B	9.9		A	10.9		B
	PM	11/15/05	13.1		B	12.2		B	12.2		B

Table ES 1 (continued)
Intersection Level of Service Summary

Intersection	Peak Hour	Count Date	Existing			Background			Project Conditions				
			Ave.	Delay	LOS	Ave.	Delay	LOS	Ave.	Delay	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C
McCarthy Blvd and Dixon Landing Rd	AM	11/16/05	11.8		B	13.8		B	14.1		B	0.0	0.001
	PM	11/16/05	9.5		A	10.6		B	10.9		B	0.3	0.003
SR 237 and McCarthy Blvd (W)	AM	5/24/05	15.2		B	15.2		B	15.5		B	0.4	0.022
	PM	5/24/05	16.6		B	19.6		B	20.2		C	1.1	0.013
SR 237 and McCarthy Blvd (E)	AM	5/24/05	15.2		B	16.8		B	17.0		B	1.0	0.040
	PM	5/24/05	15.7		B	19.4		B	20.1		C	0.7	0.016
Barber Ln and Bellew Dr	AM	5/24/05	12.6		B	12.6		B	12.6		B	0.0	0.000
	PM	5/24/05	18.6		B	18.6		B	18.6		B	0.0	0.000
Murphy Ranch Rd and Technology Dr (unsignalized) ¹	AM	11/17/05	7.7		A	7.7		A	8.2		A	0.6	0.071
	PM	11/17/05	7.4		A	7.4		A	8.2		A	0.9	0.115
Murphy Ranch Rd and Sumac Dr (unsignalized) ²	AM	11/16/05	8.9		A	8.9		A	10.9		B	-	-
	PM	11/16/05	8.9		A	8.9		A	11.2		B	-	-
McCarthy Blvd and Sumac Dr (unsignalized) ²	AM	11/16/05	27.9		D	Sat.		F	Sat.		F	-	-
	PM	11/16/05	46.8		E	Sat.		F	Sat.		F	-	-
McCarthy Blvd and Murphy Ranch Rd (unsignalized) ²	AM	11/17/05	11.3		B	11.5		B	13.5		B	-	-
	PM	11/17/05	11.1		B	12.6		B	14.0		B	-	-
Zanker Rd and Tasman Dr	AM	11/17/05	34.3		C	36.0		D	36.5		D	0.8	0.005
	PM	11/17/05	35.7		D	43.8		D	44.8		D	1.7	0.007

* Denotes CMP intersection

 - Denotes project impact.

¹ LOS for all-way stop intersection is based on the average of all movements.

² LOS for unsignalized intersection is based on worst leg.

Note: Sat. represents that the intersection is saturated and the delays are not meaningful.

1.

Introduction

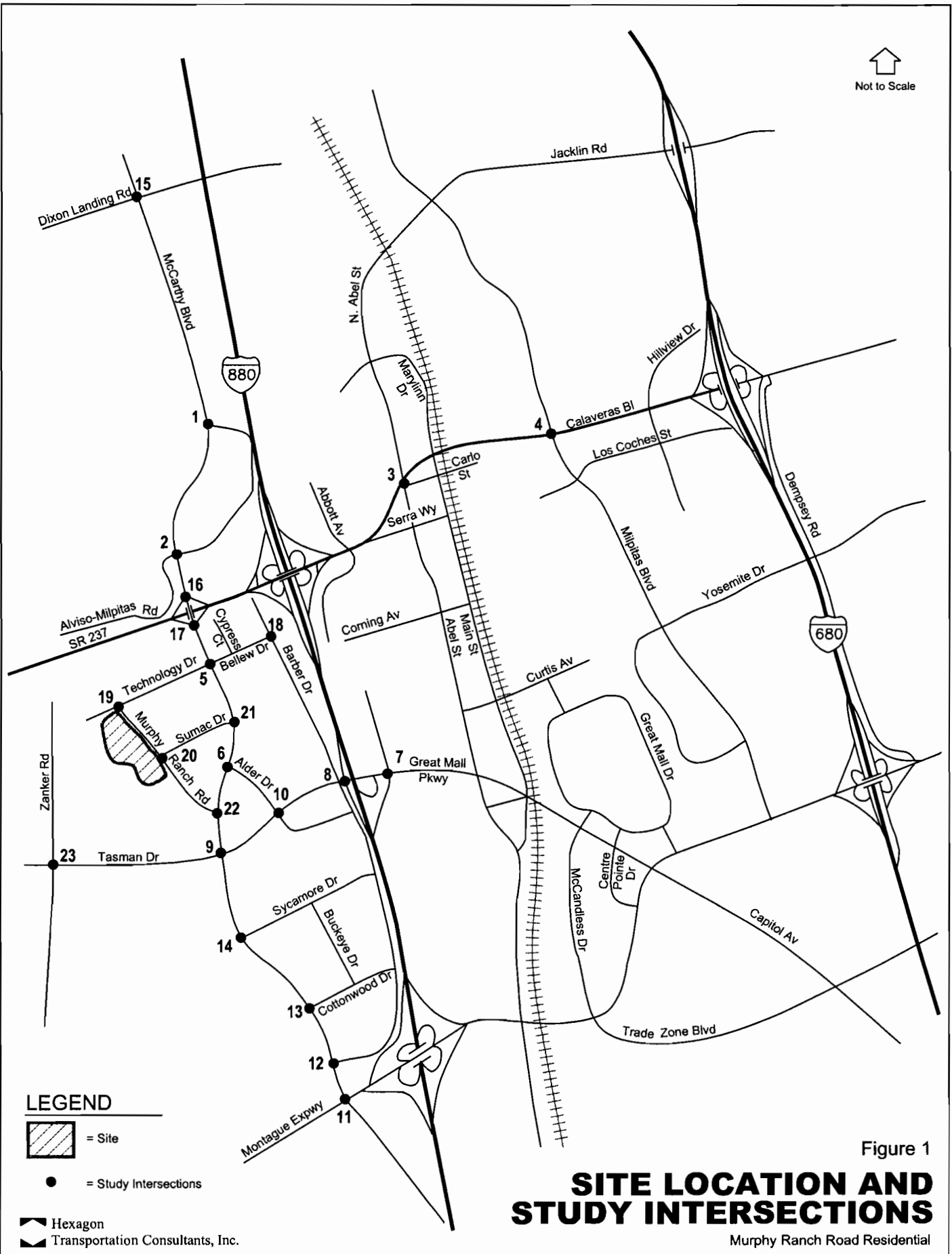
This report presents the results of the traffic impact analysis conducted for the proposed Murphy Ranch Road residential development in Milpitas, California. The site is currently vacant. The project as proposed would consist of 659 residential units (285 multi-family dwelling units and 374 apartments). Access to the site will be provided via Murphy Ranch Road and Technology Drive. Parking would be provided onsite. The proposed project would require a change in the existing General Plan designation of the project site from Industrial to Residential. The project site and the surrounding study area are shown on Figure 1. The project site plan is shown on Figure 2.

Scope of Study

This study was conducted for the purpose of identifying the potential traffic impacts related to the proposed development. The impacts of the project were evaluated following the standards and methodologies set forth by the City of Milpitas and the Santa Clara Valley Transportation Authority (VTA). The VTA administers the county Congestion Management Program (CMP). The traffic analysis is based on peak-hour levels of service for the study intersections and freeway segments. The traffic analysis also includes an evaluation of peak-hour signal warrants for the unsignalized intersections. The study intersections are identified below.

Study Intersections

- SR 237 (E. Calaveras Boulevard) and Milpitas Boulevard*
- SR 237 (W. Calaveras Boulevard) and Abel Street*
- Montague Expressway and McCarthy Boulevard/O'Toole Avenue*
- McCarthy Boulevard and Dixon Landing Road
- McCarthy Boulevard and Ranch Drive (N)
- McCarthy Boulevard and Ranch Drive (S)
- McCarthy Boulevard and SR 237 (W)
- McCarthy Boulevard and SR 237 (E)
- McCarthy Boulevard and Bellew Drive/Technology Drive



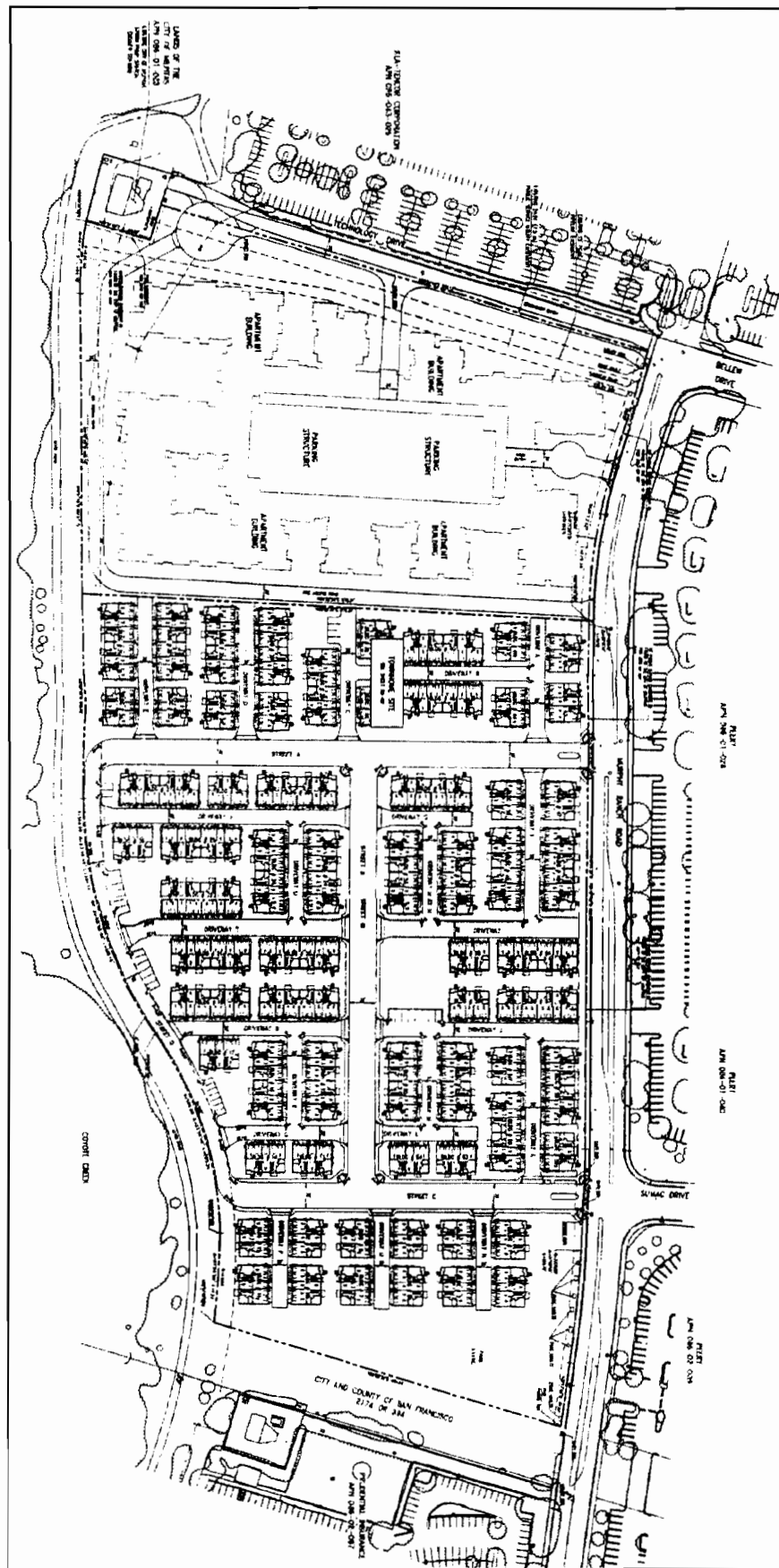


Figure 2

SITE PLAN

Murphy Ranch Road Residential

McCarthy Boulevard and Sumac Drive (unsignalized)
McCarthy Boulevard and Alder Drive
McCarthy Boulevard and Murphy Ranch Road (unsignalized)
McCarthy Boulevard and Tasman Drive
McCarthy Boulevard and Sycamore Drive
McCarthy Boulevard and Cottonwood Drive
McCarthy Boulevard and Barber Lane
Technology Drive and Murphy Ranch Road (unsignalized)
Murphy Ranch Road and Sumac Drive (unsignalized)
Bellew Drive and Barber Lane
Tasman Drive and Zanker Road
Tasman Drive and Alder Drive
Tasman Drive and I-880 (S)
Tasman Drive/Great Mall Parkway and I-880 (N)

CMP intersections are denoted with an asterisk (*).

Study Freeway Segments

I-880 between Dixon Landing Rd and SR 237/Calaveras Blvd
I-880 between SR 237/Calaveras Blvd and Great Mall Pkwy/Tasman Dr
I-880 between Great Mall Pkwy/Tasman Dr and Montague Expwy
I-880 between Montague Expwy and Brokaw Rd
SR 237 between Zanker Rd and McCarthy Blvd

In summary, the study includes an analysis of 19 signalized intersections, 4 unsignalized intersections, and 10 directional freeway segments in the vicinity of the project site. Peak-hour signal warrants were examined for the unsignalized intersections.

Traffic conditions at the study intersections were analyzed for the weekday AM and PM peak hours of traffic. The AM peak hour of traffic is generally between 7:00 and 9:00 AM, and the PM peak hour is typically between 4:00 and 6:00 PM. It is during these periods that the most congested traffic conditions occur on an average day. Traffic conditions were evaluated for the following scenarios:

- Scenario 1:** *Existing Conditions.* Existing conditions were represented by existing peak-hour traffic volumes on the existing roadway network. Existing traffic volumes were obtained from recent traffic counts and the City of Milpitas.
- Scenario 2** *Background Conditions.* Background conditions were represented by future background traffic volumes on the near-term future roadway network. Background traffic volumes were estimated by adding to existing peak-hour volumes the projected volumes from approved but not yet completed developments. The latter components are contained in the City of Milpitas Approved Trips Inventory (ATI) and the City of San Jose ATI.
- Scenario 3** *Project Conditions.* Project conditions were represented by future traffic volumes, with the project, on the near-term future roadway network. Future traffic volumes with the project (hereafter called *project traffic volumes*) were estimated by adding to background traffic volumes the additional traffic generated by the project. Project conditions were evaluated relative to background conditions in order to determine potential project impacts.

Scenario 4 *Cumulative Conditions.* Cumulative conditions were represented by year 2030 traffic volumes on the roadway network. Traffic volumes were obtained from the City of Milpitas. Impacts for cumulative conditions were evaluated relative to the existing Milpitas General Plan. Per City of Milpitas requirements, roadway segments were evaluated for cumulative conditions.

Methodology

This section presents the methods used to determine the traffic conditions for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

Data Requirements

The data required for the analysis were obtained from new traffic counts, previous traffic studies, the City of Milpitas, the City of San Jose, and the CMP annual Monitoring Report. The following data were collected from these sources:

- existing traffic volumes
- lane configurations
- signal timing and phasing (for signalized intersections only)
- approved trips inventory for Milpitas and San Jose

Analysis Methodologies

Traffic conditions at the study locations were evaluated using level of service (LOS). *Level of Service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays.

Intersections

The City of Milpitas and CMP level of service methodologies utilize TRAFFIX software using CMP default settings. TRAFFIX is based on the *2000 Highway Capacity Manual* (HCM) method for intersections, and evaluates intersection operations on the basis of average delay for all vehicles at the intersection. This average delay can then be correlated to a level of service as shown in Table 1 for signalized intersections. The level of service correlation for unsignalized intersections is shown in Table 2. For two way stop controlled intersections, the level of service reported is for the worst approach of the intersection.

In addition to the level of service evaluation, for unsignalized intersections an assessment is made of the need for signalization of the intersection. This assessment is made on the basis of the Peak-hour Volume Signal Warrant, Warrant #11 described in the Caltrans *Traffic Manual*. This method makes no evaluation of intersection level of service, but simply provides an indication whether peak-hour traffic volumes are, or would be, sufficient to justify installation of a traffic signal.

Table 1
Signalized Intersection Level of Service Definitions Based on Delay

Level of Service	Description	Average Control Delay Per Vehicle (seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	10.0 or less
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.1 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	Greater than 80.0

Source: Transportation Research Board, *Highway Capacity Manual 2000*, Exhibit 16-2.

Roadway Segments

As prescribed in the CMP technical guidelines, the level of service for freeway segments is estimated based on vehicle density. Density is calculated by the following formula:

$$D = V / (N \cdot S)$$

where:

D= density, in vehicles per mile per lane (vpmpl)

V= peak hour volume, in vehicles per hour (vph)

N= number of travel lanes

S= average travel speed, in miles per hour (mph)

The vehicle density on a segment is correlated to level of service as shown in Table 3. The CMP requires that mixed-flow lanes and auxiliary lanes be analyzed separately from HOV (carpool) lanes. The CMP specifies that a capacity of 2,300 vehicles per hour per lane (vphpl) be used for segments three lanes or wider in one direction and a capacity of 2,200 vphpl be used for segments two lanes wide in one direction.

For cumulative conditions, the traffic operations at the study segments were calculated based on the volume-to-capacity ratio, which can be correlated to a level of service. Table 4 shows the roadway types, capacity assumptions, and LOS thresholds that were used for this analysis.

Table 2
Unsignalized Intersection Level of Service Definitions Based on Delay

Level of Service	Description	Average Stopped Delay Per Vehicle (Sec.)
A	Operations with very low delay occurring with favorable progression .	10.0 or less
B	Operations with low delay occurring with good progression.	10.1 to 15.0
C	Operations with average delays resulting from fair progression.	15.1 to 25.0
D	Operations with longer delays due to a combination of unfavorable progression or high V/C ratios.	25.1 to 35.0
E	Operations with high delay values indicating poor progression and high V/C ratios. This is considered to be the limit of acceptable delay.	35.1 to 50.0
F	Operation with delays unacceptable to most drivers occurring due to oversaturation and poor progression.	Greater than 50.0

Source: Transportation Research Board, *Highway Capacity Manual 2000*.

Level of Service Standards

For CMP intersections, roadway segments, and freeway segments, the minimum acceptable level of service is LOS E. At intersections and roadway segments in San Jose and Milpitas that are not CMP intersections, the minimum acceptable level of service is LOS D.

The City of San Jose has established a deficiency plan for the 22 CMP intersections in north San Jose. The plan requires that the average delay during the PM peak hour at the 22 intersections be averaged to less than 88 seconds. According to the North San Jose Plan (NSJDP), the maximum delay at an intersection is capped at 150 percent of its cycle length. All of these intersections are designated CMP intersections. They are:

- U.S. 101 and Brokaw Road
- SR 237 and North First Street (north)
- SR 237 and North First Street (south)
- SR 237 and Zanker Road (north)
- SR 237 and Zanker Road (south)
- I-880 and Brokaw Road (East)
- I-880 and Brokaw Road (West)
- I-880 and North First Street (North)
- I-880 and North First Street (South)
- Brokaw Road and Old Oakland Road
- Brokaw Road and North First Street
- Brokaw Road and Zanker Road
- De La Cruz Avenue Boulevard and Trimble Road
- North First Street and Montague Expressway
- North First Street and Trimble Road
- Lundy Avenue and Murphy Avenue
- Montague Expressway and Zanker Road
- Montague Expressway and Trade Zone/McCandless Drive
- Montague Expressway and South Main Street/Old Oakland Road
- Montague Expressway and McCarthy Boulevard/O'Toole
- Montague Expressway and Trimble Road
- Trimble Road and Zanker Road

Table 3
Freeway Segment Level of Service Based on Density

Level of Service	Description	Density (vehicles/mile/lane)
A	Average operating speeds at the free-flow speed generally prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	0-11
B	Speeds at the free-flow speed are generally maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high.	>11-18
C	Speeds at or near the free-flow speed of the freeway prevail. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more vigilance on the part of the driver.	>18-26
D	Speeds begin to decline slightly with increased flows at this level. Freedom to maneuver within the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort levels.	>26-46
E	At this level, the freeway operates at or near capacity. Operations in this level are volatile, because there are virtually no usable gaps in the traffic stream, leaving little room to maneuver within the traffic stream.	>46-58
F	Vehicular flow breakdowns occurs. Large queues form behind breakdown points.	>58

Source: VTA CMP *Traffic Level of Service Analysis Guidelines*, June 2003.

Table 4
City of Milpitas Roadway Segment LOS

Facility	Lane Capacity	Level of Service					
		A	B	C	D	E	F
Freeway	2,000	1,200	1,400	1,600	1,800	2,000	>2,000
Expressway	1,100	660	770	880	990	1,100	>1,100
Major Arterial	1,000	600	700	800	900	1,000	>1,000
Arterial	900	540	630	720	810	900	>900

Report Organization

The remainder of this report is divided into five chapters. Chapter 2 describes existing conditions in terms of the existing roadway network, transit service, and existing bicycle and pedestrian facilities. Chapter 3 presents roadway operations under background conditions. Chapter 4 describes the method used to estimate project traffic, its impact on the transportation system, and the recommended mitigation measures. Chapter 5 discusses other transportation impacts such as transit, bikes and pedestrians. Chapter 6 discusses the traffic conditions under 2030 conditions.

2.

Existing Conditions

This chapter describes the existing conditions for all the major transportation facilities in the vicinity of the site, including the roadway network, transit service, and bicycle and pedestrian facilities.

Existing Roadway Network

Regional access to the project site is provided via I-880, I-680, and SR 237/Calaveras Boulevard. These facilities are described below.

I-680 is a north/south freeway traversing the eastern portion of Milpitas. This freeway connects the inland East Bay communities to the north with San Jose to the south. I-680 has six mixed flow lanes north of SR 237 and eight mixed flow lanes south of SR 237. A southbound HOV lane is currently in operation north of Calaveras Boulevard.

I-880 is a north/south freeway providing regional access from East Bay cities to San Jose, where it becomes SR 17. Within the City of Milpitas, I-880 is a six-to-eight lane freeway. The initial construction phases of the SR 237/I-880 interchange have recently been completed. South of Montague Expressway, I-880 has recently been widened to six lanes.

State Route 237/Calaveras Boulevard is an east/west arterial between I-880 and I-680 and generally provides six travel lanes (four on the Union Pacific overcrossing). West of I-880, this facility becomes a freeway with four mixed flow lanes and two High Occupancy Vehicle (HOV) lanes. Calaveras Boulevard accommodates a significant amount of regional through traffic during the peak commute hours. Milpitas staff estimate that approximately 50 percent of the peak hour traffic between I-680 and I-880 is generated outside of Milpitas. The predominate direction of travel is westbound in the morning and eastbound during the afternoon.

Local access to the site is provided by Montague Expressway, McCarthy Boulevard, Tasman Drive, Technology Drive, and Murphy Ranch Road. These roadways are described below.

Montague Expressway is an east/west expressway in southern Milpitas that generally provides six travel lanes. It is operated by the Santa Clara County Roads and Airports Department. The peak direction of travel is westbound in the morning, and eastbound in the evening. This facility also provides HOV lanes both during the AM peak hours in the westbound direction and PM peak hours in the eastbound direction. Montague Expressway is a CMP facility that experiences moderate congestion during both commute periods.

McCarthy Boulevard is a four-lane divided north/south arterial connecting Montague Expressway in the south to Dixon Landing Road in the north. McCarthy Boulevard primarily serves as access to SR 237, Montague Expressway, and I-880 for several Business Parks.

Tasman Drive is a six-lane, east/west, arterial extending into San Jose via a bridge over the Coyote Creek. East of I-880, Tasman Drive becomes Great Mall Parkway. The Alum Rock to Santa Teresa Light Rail line runs down the center of Tasman Drive.

Technology Drive is a two-lane, east/west, roadway that extends east from Murphy Ranch Road to McCarthy Boulevard where it becomes Bellew Drive. Bellew Drive is a four-lane roadway with a two-way-center-left-turn lane. Parking is prohibited on both sides of the street.

Murphy Ranch Road is a two-lane roadway that extends from Technology Drive in the north to McCarthy Boulevard in the south. Parking is prohibited on both sides of the street. Direct access to the project site is proposed via four driveways.

Existing Bicycle and Pedestrian Facilities

According to the City of Milpitas Bikeway Master Plan the Valley Transportation Agency (VTA) Santa Clara Valley Bikeways Map, there are numerous city- and county-designated bikeways within the vicinity of the project site.

- McCarthy Boulevard has Class II bicycle lanes from Dixon Landing Road to Ranch Road (S). McCarthy Boulevard has Class III bicycle routes from Ranch Road (S) to Montague Expressway.
- Milpitas Boulevard has Class II bicycle lanes from the County line in the north to Yosemite Drive in the south, where it becomes a Class III route to Montague Expressway.
- Barber Lane has Class II bicycle lanes from Bellew Drive in the north to McCarthy Boulevard in the south.
- Ranch Drive has Class II bicycle lanes along its entirety.
- Great Mall Parkway/Tasman Drive has Class II bicycle lanes from Montague Expressway in the east to McCarthy Boulevard in the west, where it becomes a Class III route to Zanker Road.

Bicycle facilities are shown on Figure 3. Sidewalks are found along virtually all previously-described local roadways in the study area and along the commercial streets and collectors near the site.

Existing Transit Service

Existing transit service to the study area is provided by the VTA. The existing VTA service is described below and shown on Figure 4.

VTA Bus Service

The 33 line provides service between Tasman and 1st-Great Mall/Main Transit Center via McCarthy Boulevard, Bellew Drive, and Barber Lane, with 30-minute headways during commute hours.

The 330 line is a limited stop route that provides service between Almaden Expressway and Camden – N. San Jose via Tasman Drive, with 40 to 60-minute headways during commute hours.

The 104 line is an express route that provides service between Penitencia Creek Transit Center and Palo Alto via SR 237, with 30 to 45-minute headways during commute hours.

The 120 line is an express route that provides service between the Fremont BART station and Lockheed Martin/Moffett Park via SR 237 and Abel Street, with 60 to 75-minute headways during commute hours.

The 140 line is an express route that provides service between the Fremont BART station and the Sunnyvale Caltrain station via Tasman Drive, with 30 to 60-minute headways during commute hours.

The 141 line is an express route that provides service between the Fremont BART station and Great America via SR 237 and I-880. This line operates on weekends only from March through October, with 30 to 90-minute headways.

VTA Light Rail Transit (LRT) Service

There are five Capitol Corridor LRT stations located within approximately two miles of the project site. The Guadalupe Corridor LRT provides service on 15-minute headways during commute and midday hours. It provides service between Santa Teresa in south San Jose to Alum Rock in north San Jose.

The Cisco Way LRT station is located between McCarthy Boulevard and Zanker Road. The Cisco Way LRT station provides a direct connection to VTA bus service.

The I-880/Milpitas LRT station is located near Tasman Drive and Alder Drive. The I-880/Milpitas LRT station provides a direct connection to VTA bus service and offers bicycle lockers.

The Great Mall/Main LRT station is located near Main Street and Great Mall Parkway. The Great Mall/Main LRT station provides a direct connection to VTA bus service and offers bicycle lockers.

The Baypointe LRT station is located between N. 1st Street and Zanker Road. The Baypointe LRT station provides a direct connection to VTA bus service.

The Tasman LRT transfer station is located near Tasman Drive and N. 1st Street. The Tasman LRT station provides a direct connection to VTA bus service and transfers to the Mountain View – Winchester LRT line.

Existing Intersection Lane Configurations & Traffic Volumes

The existing lane configurations at the study intersections were determined by observations in the field and confirmed with City staff. The existing intersection lane configurations are shown on Figure 5. Existing peak-hour traffic volumes were obtained from the City of Milpitas and supplemented with manual turning-movement counts at intersections where counts were either unavailable or outdated (more than two years old). The existing peak-hour intersection volumes are shown on Figure 6. The traffic count data are included in Appendix A.

Existing Intersection Analysis

The level of service results for the signalized and unsignalized intersections under existing conditions are summarized in Table 5. The results show that, measured against the City of Milpitas level of service standards, the intersection of McCarthy Boulevard and Sumac Drive currently operates at LOS E during the PM peak hour. All of the remaining study intersections currently operate at acceptable levels. The level of service calculation sheets are included in Appendix D.

Existing Freeway Levels of Service

Traffic volumes for the study freeway segments were obtained from the 2004 CMP Annual Monitoring Report. The results of the analysis are summarized in Table 5. The results show that the following study freeway segments currently operate at LOS F in at least one direction during at least one of the peak hours of traffic:

- I-880, northbound between SR 237 and Dixon Landing Rd – PM peak hour
- I-880, southbound between Montague Expwy and Brokaw Rd – PM peak hour
- SR 237, westbound between McCarthy Blvd and Zanker Rd – AM & PM peak hours

Existing Signal Warrants

The peak-hour signal warrant (*Caltrans Traffic Manual*, Chapter 9, Warrant 11) was checked for the four unsignalized intersections to determine whether signalization would be justified on the basis of existing peak-hour volumes. The analysis showed that none of the study intersections would meet the signal warrant under existing conditions. The signal warrant analysis sheets are included in Appendix E.

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Not to Scale

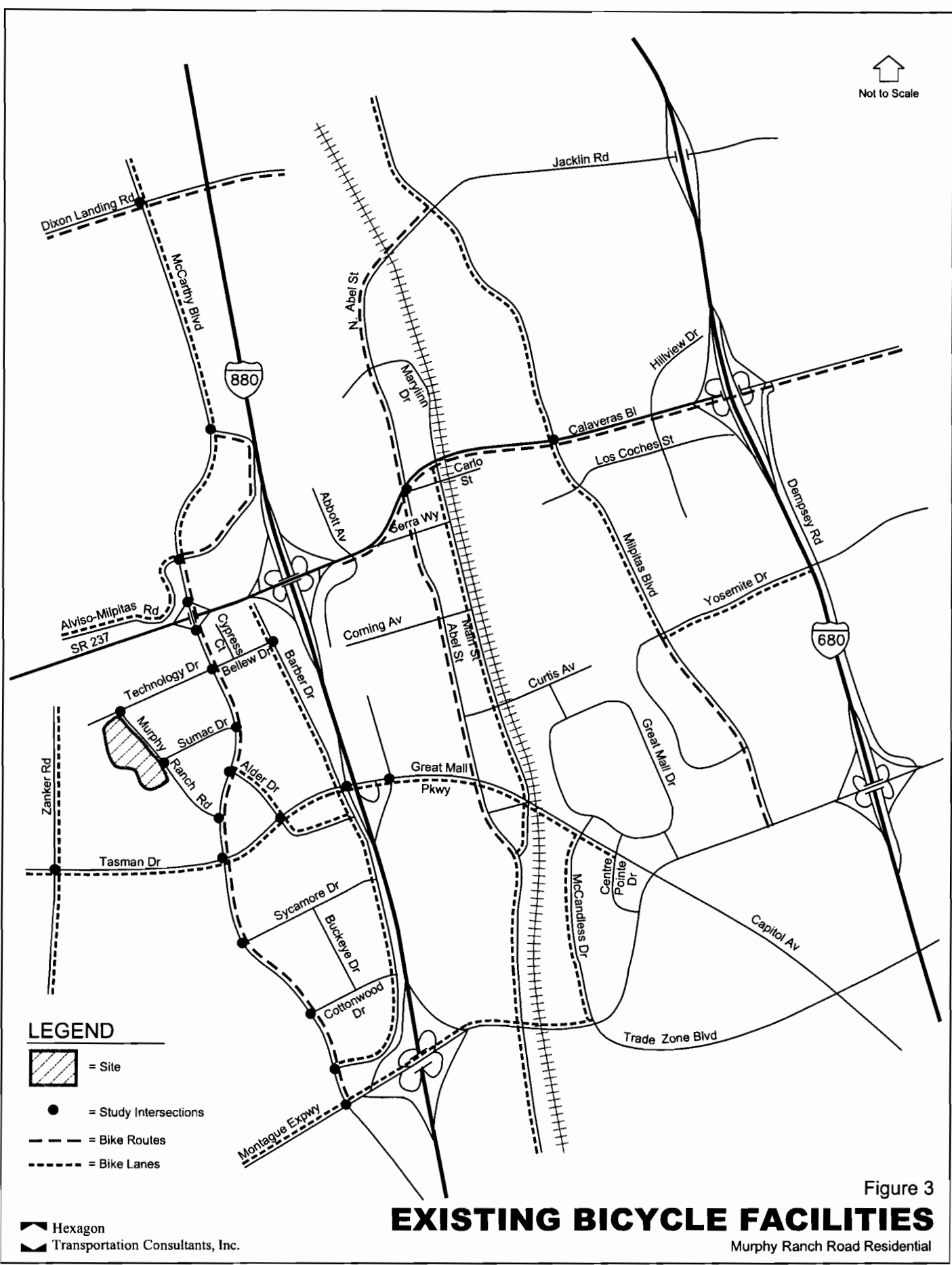


Figure 3

EXISTING BICYCLE FACILITIES

Murphy Ranch Road Residential

↑
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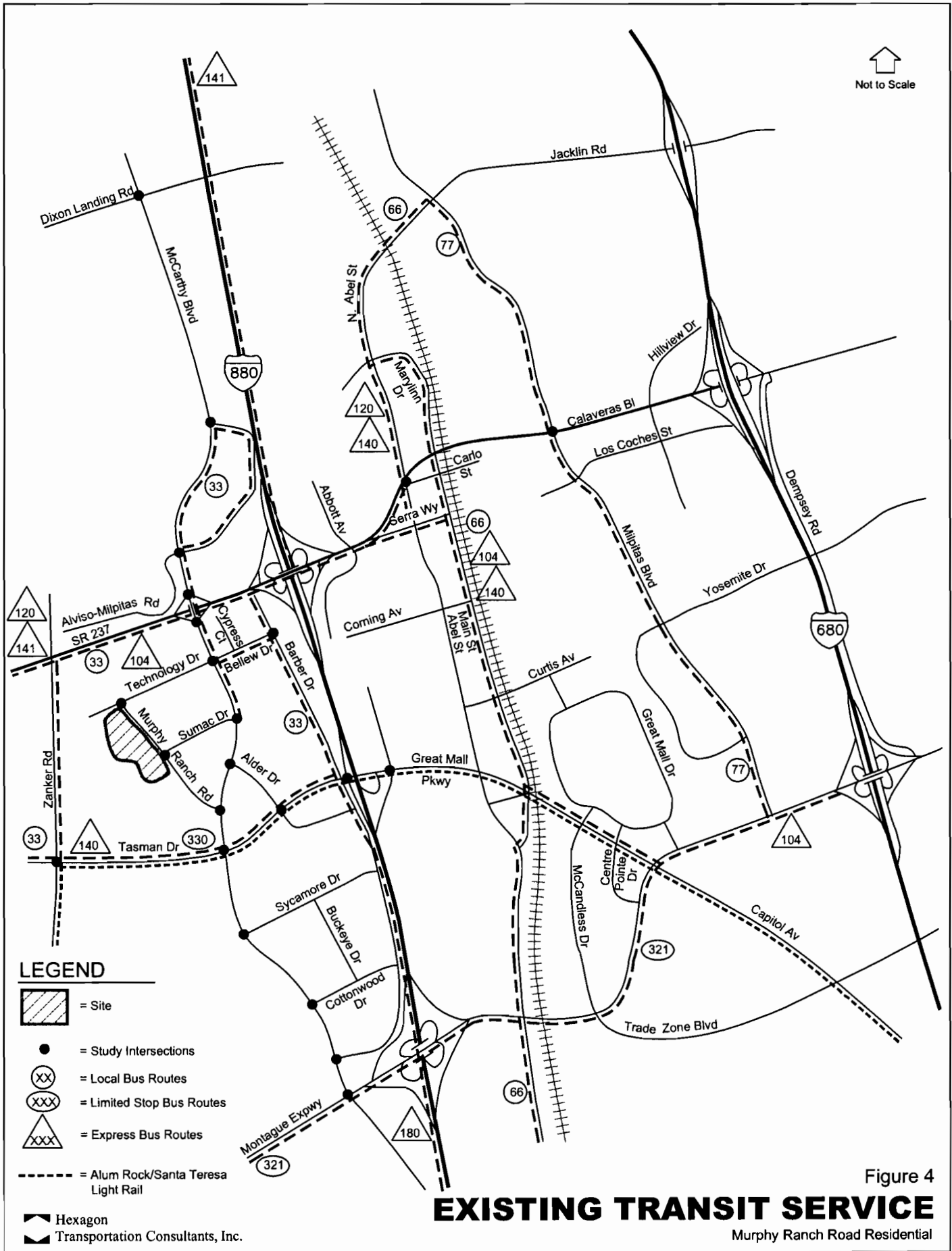


Figure 4

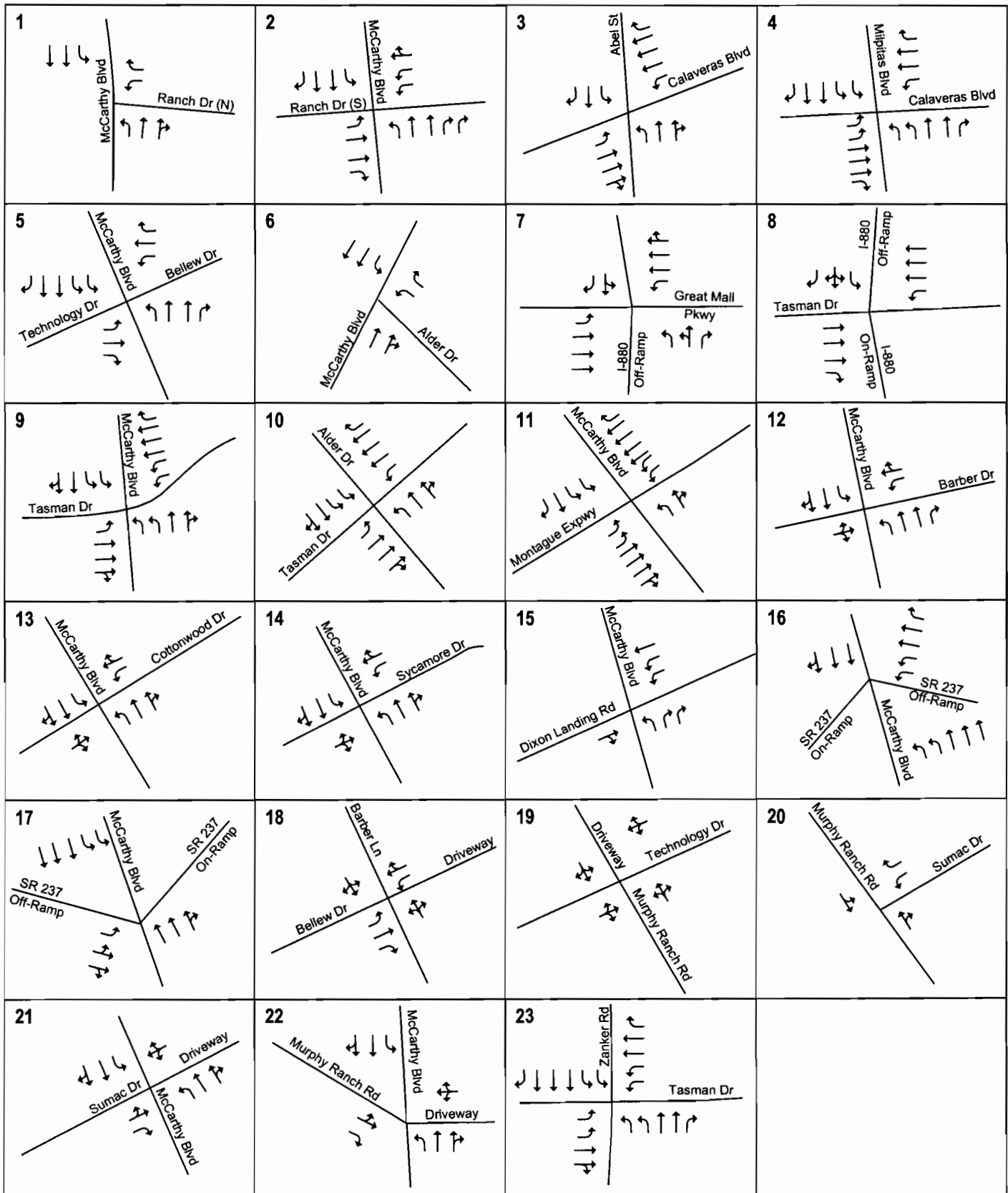
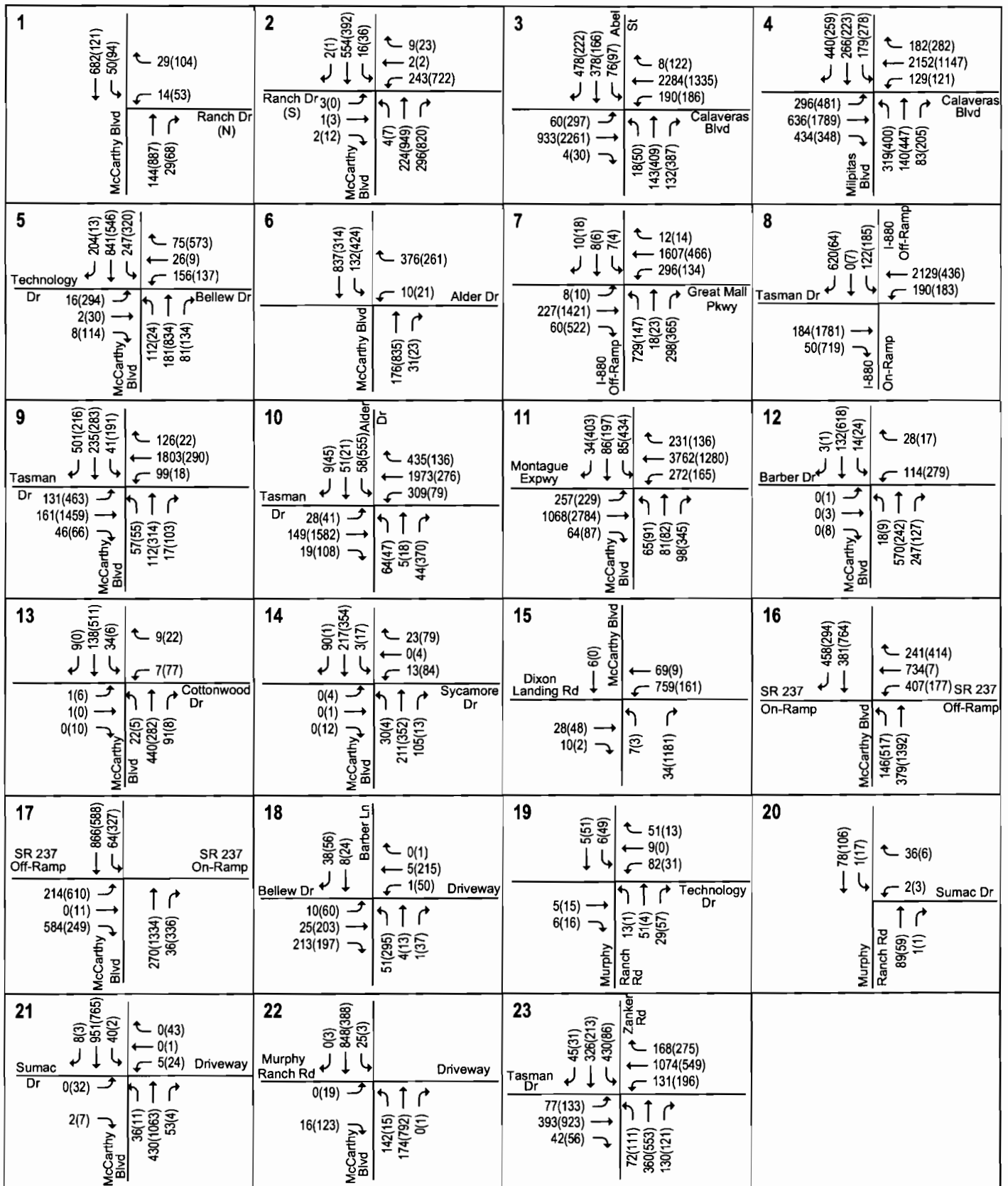


Figure 5

EXISTING LANE CONFIGURATIONS

Murphy Ranch Road Residential



Legend

XX(XX) = AM(PM) Peak-Hour Traffic Volumes



Hexagon



Transportation Consultants, Inc.

Figure 6

EXISTING TRAFFIC VOLUMES

Murphy Ranch Road Residential

Table 5
Existing Intersection Levels of Service

Intersection	Peak Hour	Count Date	Ave. Delay	LOS
McCarthy Blvd and Ranch Dr (N)	AM	11/29/005	6.6	A
	PM	11/29/005	10.8	B
McCarthy Blvd and Ranch Dr (S)	AM	5/24/05	16.8	B
	PM	5/24/05	22.7	C
Abel St and SR 237 (Calaveras Blvd)*	AM	10/6/04	37.3	D
	PM	5/26/05	38.2	D
Milpitas Blvd and SR 237 (Calaveras Blvd)*	AM	10/6/04	55.8	E
	PM	5/26/05	40.0	D
McCarthy Blvd and Bellew Dr	AM	5/24/05	19.0	B
	PM	5/24/05	33.6	C
McCarthy Blvd and Alder Dr	AM	11/17/05	11.6	B
	PM	11/17/05	16.7	B
I-880 NB and Great Mall Pkwy	AM	5/12/05	24.6	C
	PM	5/12/05	19.3	B
I-880 SB and Tasman Dr	AM	5/12/05	13.6	B
	PM	5/12/05	13.1	B
McCarthy Blvd and Tasman Dr	AM	5/12/05	31.9	C
	PM	5/12/05	24.6	C
Alder Dr and Tasman Dr	AM	5/12/05	14.9	B
	PM	5/12/05	36.9	D
McCarthy Blvd/O'Toole and Montague Expwy*	AM	5/12/05	41.9	D
	PM	10/10/04	60.5	E
McCarthy Blvd and Barber Ln	AM	11/15/05	9.8	A
	PM	11/15/05	19.7	B
McCarthy Blvd and Cottonwood Dr	AM	11/15/05	13.0	B
	PM	11/15/05	15.5	B
McCarthy Blvd and Sycamore Dr	AM	11/15/05	10.6	B
	PM	11/15/05	13.1	B
McCarthy Blvd and Dixon Landing Rd	AM	11/16/05	11.8	B
	PM	11/16/05	9.5	A
SR 237 and McCarthy Blvd (W)	AM	5/24/05	15.2	B
	PM	5/24/05	16.6	B
SR 237 and McCarthy Blvd (E)	AM	5/24/05	15.2	B
	PM	5/24/05	15.7	B
Barber Ln and Bellew Dr	AM	5/24/05	12.6	B
	PM	5/24/05	18.6	B

Table 5 (continued)
Existing Intersection Levels of Service

Intersection	Peak Hour	Count Date	Ave. Delay	LOS
Murphy Ranch Rd and Technology Dr (unsignalized) ¹	AM	11/17/05	7.7	A
	PM	11/17/05	7.4	A
Murphy Ranch Rd and Sumac Dr (unsignalized) ²	AM	11/16/05	8.9	A
	PM	11/16/05	8.9	A
McCarthy Blvd and Sumac Dr (unsignalized) ²	AM	11/16/05	27.9	D
	PM	11/16/05	46.8	E
McCarthy Blvd and Murphy Ranch Rd (unsignalized) ²	AM	11/17/05	11.3	B
	PM	11/17/05	11.1	B
Zanker Rd and Tasman Dr	AM	11/17/05	34.3	C
	PM	11/17/05	35.7	D

* Denotes CMP intersection

¹ LOS for all-way stop intersection is based on the average of all movements.

² LOS for unsignalized intersection is based on worst leg.

Table 6
Existing Freeway Levels of Service

Freeway	Segment	Direction	Peak Hour	Mixed-Flow Lanes				
				Ave. Speed/a/	# of Lanes	Volume/a/	Density	LOS
I-880	Brokaw Rd to Montague Expwy	NB	AM	65	3	5,850	30.0	D
I-880	Brokaw Rd to Montague Expwy	NB	PM	66	3	4,360	22.0	C
I-880	Montague Expwy to Great Mall Pkwy	NB	AM	66	3	5,150	26.0	C
I-880	Montague Expwy to Great Mall Pkwy	NB	PM	66	3	5,150	26.0	C
I-880	Great Mall Pkwy to SR 237	NB	AM	63	3	6,430	34.0	D
I-880	Great Mall Pkwy to SR 237	NB	PM	41	3	6,270	51.0	E
I-880	SR 237 to Dixon Landing Rd	NB	AM	66	4	5,700	24.0	C
I-880	SR 237 to Dixon Landing Rd	NB	PM	15	4	5,130	95.0	F
SR 237	Zanker Rd to McCarthy Blvd	EB	AM	66	2	3,700	28.0	D
SR 237	Zanker Rd to McCarthy Blvd	EB	PM	61	2	4,390	36.0	D
I-880	Dixon Landing Rd to SR 237	SB	AM	65	4	7,020	30.0	D
I-880	Dixon Landing Rd to SR 237	SB	PM	66	4	5,700	24.0	C
I-880	SR 237 to Great Mall Pkwy	SB	AM	66	3	5,540	28.0	D
I-880	SR 237 to Great Mall Pkwy	SB	PM	66	3	4,750	24.0	C
I-880	Great Mall Pkwy to Montague Expwy	SB	AM	66	3	5,350	27.0	D
I-880	Great Mall Pkwy to Montague Expwy	SB	PM	39	3	6,200	53.0	E
I-880	Montague Expwy to Brokaw Rd	SB	AM	66	3	4,950	25.0	C
I-880	Montague Expwy to Brokaw Rd	SB	PM	21	3	5,100	81.0	F
SR 237	McCarthy Blvd to Zanker Rd	WB	AM	11	3	3,110	113.0	F
SR 237	McCarthy Blvd to Zanker Rd	WB	PM	25	3	4,560	73.0	F
/a/ Source: Santa Clara Valley Transportation Authority Congestion Management Program Monitoring Study, 2004.								

Observed Existing Traffic Conditions

Traffic conditions in the field were observed in order to identify existing operational deficiencies and to confirm the accuracy of calculated levels of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to level of service, and (2) to identify any locations where the level of service analysis does not accurately reflect existing traffic conditions.

Overall the study intersections operated well during both the AM and PM peak hours of traffic, and the level of service analysis appears to accurately reflect actual existing traffic conditions. However, field observations revealed that some operational problems do occur.

SR 237 and Milpitas Boulevard – During the AM peak hours, the westbound traffic queue was unable to clear the intersection in one signal cycle. During the PM peak hours, eastbound traffic queues beyond the rail overpass and at times beyond the Abel Street/Calaveras Boulevard intersection. The eastbound through queue was unable to clear the intersection in one signal cycle.

SR 237 and Abel Street – During AM peak hours, the westbound traffic queues beyond the railroad overpass. However, the westbound queue was able to clear the intersection in one signal cycle. During PM peak hours, eastbound traffic frequently queues beyond Serra Way. The eastbound queue was able to clear the intersection in one signal cycle.

SR 237(WB ramps) and McCarthy Boulevard – During the PM peak hours, the northbound left-turn queue fills the turn pocket and blocks the through lane.

SR 237 (EB ramps) and McCarthy Boulevard – During the PM peak hours, the northbound queue on McCarthy Boulevard was unable to clear the intersection in one signal cycle. This queue extends back through to Alder Drive and occasionally blocks the intersections of Technology Drive, Sumac Drive, and Alder Drive. Also, the southbound left-turn queue occasionally spills into the through lane.

McCarthy Boulevard and Technology Drive – Westbound traffic queues spill back through the Cypress/Bellew Drive intersection.

McCarthy Boulevard and Tasman Drive – During the PM peak hours, the eastbound left-turn lane skips signal cycles because of the light rail. When this occurs, the left-turn pocket traffic spills into the through lane. This queue clears during the next regular signal cycle.

3.

Background Conditions

This chapter describes background traffic conditions. Background conditions are defined as conditions just prior to completion of the proposed development. Traffic volumes for background conditions comprise volumes from existing traffic counts plus traffic generated by other approved developments in the vicinity of the site. This chapter describes the procedure used to determine background traffic volumes and the resulting traffic conditions.

Background Transportation Network & Traffic Volumes

It is assumed in this analysis that the future near-term roadway network under background conditions would be the same as the existing roadway network. Bicycle, transit, and pedestrian facilities under background conditions were assumed to remain unchanged from existing conditions.

Background peak-hour traffic volumes were calculated by adding to existing volumes the estimated traffic from approved but not yet constructed developments. The added traffic from approved but not yet constructed developments were provided by Milpitas and San Jose in the form of the Approved Trips Inventory (ATI). Background traffic volumes are shown on Figure 7. A list of major approved projects that would add traffic to the study intersections is provided below. A full description of the ATI are included in Appendix B.

- Cisco Systems Site 4 – San Jose
- Tasman/McCarthy Business Center
- Irvine Company R&D - Phase 2
- Cisco Systems Site 5 - Milpitas
- Veritas Software
- Parc Place Residential
- Elmwood Residential
- Fairfield Residential
- Milpitas Town Center
- Hillview Center Mixed-use
- Apton Plaza Mixed-use
- North Main Street – Library
- Great Mall GLA Recapture
- Trimble Technology Center (from City San Jose)
- Venture Commerce (from City San Jose)
- Ebay (from City San Jose)
- Ultratech Stepper (from City San Jose)

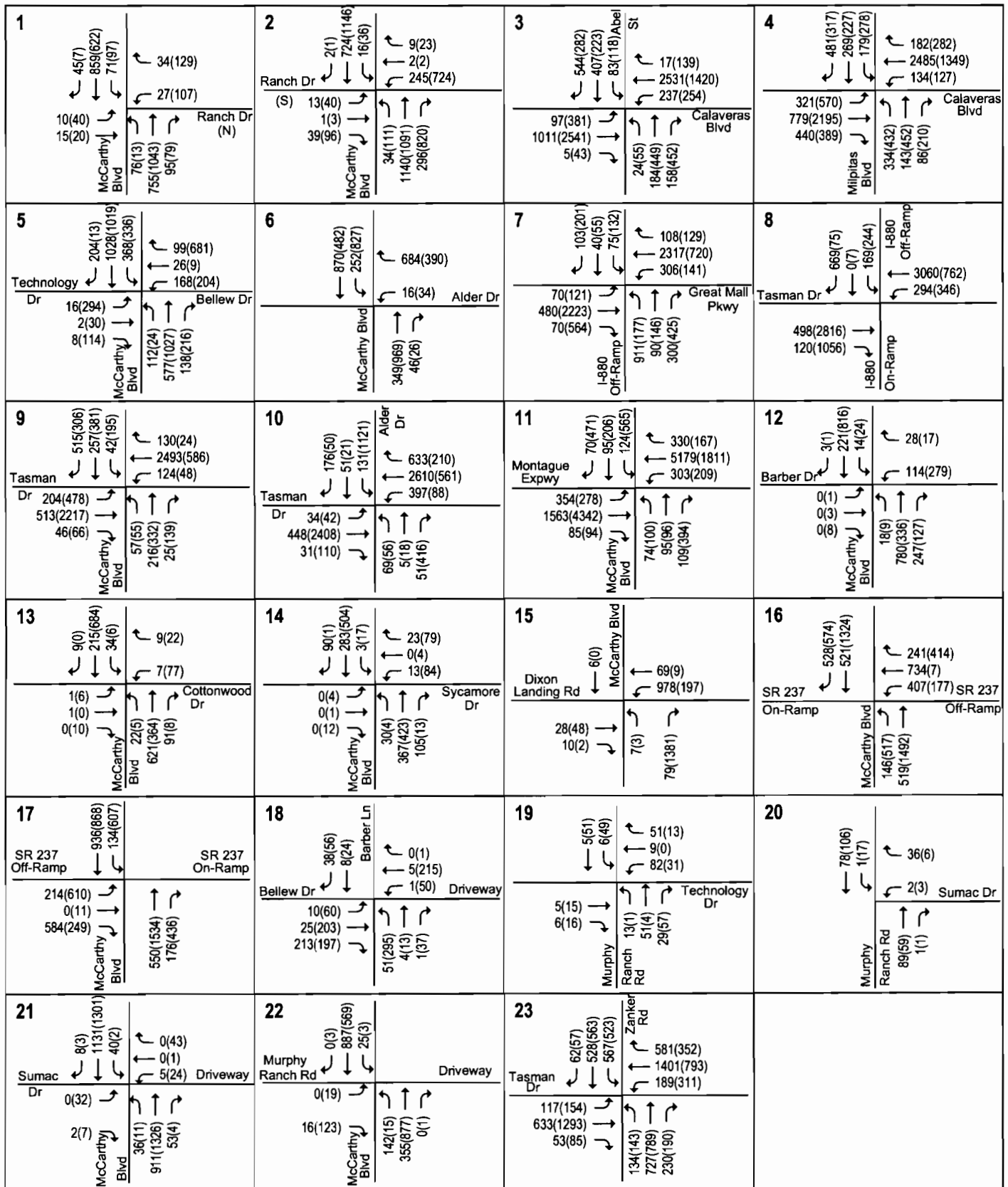
- 3Com (from City San Jose)
- North San Jose Project (from City San Jose)
- US Dataport (from City San Jose)
- BEA (from City San Jose)
- Hewlett Packard (from City San Jose)
- Sleep Inn Hotel (from City San Jose)
- Cisco Alviso (from City San Jose)

Background Intersection Analysis

The results of the intersection level of service analysis under background conditions are summarized in Table 7. The results show that four of the study intersections would operate at an unacceptable LOS measured against the City of Milpitas and CMP level of service guidelines. The intersection of Milpitas Boulevard/SR 237 (Calaveras Blvd) would operate at LOS F during the AM peak hour. The intersection of Alder Drive/Tasman Drive would operate at LOS E during the AM peak hour and LOS F during the PM peak hours. The intersection of Montague Expressway/McCarthy Boulevard-O'Toole Avenue would operate at LOS F during the PM peak hour. The unsignalized intersection of McCarthy Boulevard/Sumac Drive would operate at LOS F during both the AM and PM peak hours. The remaining study intersections would operate at an acceptable LOS. The level of service calculation sheets are included in Appendix D.

Background Signal Warrants

The peak-hour signal warrant (Caltrans Traffic Manual, Chapter 9, Warrant 11) was checked for the four unsignalized intersections to determine whether signalization would be justified on the basis of background peak-hour volumes. The analysis showed that the peak-hour volume signal warrant is not satisfied under background conditions at the intersections. The signal warrant analysis sheets are included in Appendix E.



Legend

XX(XX) = AM(PM) Peak-Hour Traffic Volumes



Hexagon



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BACKGROUND TRAFFIC VOLUMES

Murphy Ranch Road Residential

Figure 7

Table 7
Background Intersection Levels of Service

Intersection	Peak Hour	Existing		Background	
		Ave. Delay	LOS	Ave. Delay	LOS
McCarthy Blvd and Ranch Dr (N)	AM	6.6	A	18.7	B
	PM	10.8	B	20.2	C
McCarthy Blvd and Ranch Dr (S)	AM	16.8	B	19.2	B
	PM	22.7	C	43.1	D
Abel St and SR 237 (Calaveras Blvd)*	AM	37.3	D	43.1	D
	PM	38.2	D	61.7	E
Milpitas Blvd and SR 237 (Calaveras Blvd)*	AM	55.8	E	82.3	F
	PM	40.0	D	41.9	D
McCarthy Blvd and Bellew Dr	AM	19.0	B	27.5	C
	PM	33.6	C	50.9	D
McCarthy Blvd and Alder Dr	AM	11.6	B	15.5	B
	PM	16.7	B	53.2	D
I-880 NB and Great Mall Pkwy	AM	24.6	C	44.4	D
	PM	19.3	B	29.1	C
I-880 SB and Tasman Dr	AM	13.6	B	22.7	C
	PM	13.1	B	27.1	C
McCarthy Blvd and Tasman Dr	AM	31.9	C	53.1	D
	PM	24.6	C	35.5	D
Alder Dr and Tasman Dr	AM	14.9	B	21.4	C
	PM	36.9	D	131.9	F
McCarthy Blvd/O'Toole and Montague Expwy*	AM	41.9	D	59.5	E
	PM	60.5	E	133.6	F
McCarthy Blvd and Barber Ln	AM	9.8	A	9.6	A
	PM	19.7	B	20.6	C
McCarthy Blvd and Cottonwood Dr	AM	13.0	B	15.4	B
	PM	15.5	B	16.1	B
McCarthy Blvd and Sycamore Dr	AM	10.6	B	9.9	A
	PM	13.1	B	12.2	B
McCarthy Blvd and Dixon Landing Rd	AM	11.8	B	13.8	B
	PM	9.5	A	10.6	B
SR 237 and McCarthy Blvd (W)	AM	15.2	B	15.2	B
	PM	16.6	B	19.6	B
SR 237 and McCarthy Blvd (E)	AM	15.2	B	16.8	B
	PM	15.7	B	19.4	B
Barber Ln and Bellew Dr	AM	12.6	B	12.6	B
	PM	18.6	B	18.6	B

Table 7 (continued)
Background Intersection Levels of Service

Intersection	Peak Hour	Existing		Background	
		Ave. Delay	LOS	Ave. Delay	LOS
Murphy Ranch Rd and Technology Dr (unsignalized) ¹	AM	7.7	A	7.7	A
	PM	7.4	A	7.4	A
Murphy Ranch Rd and Sumac Dr (unsignalized) ²	AM	8.9	A	8.9	A
	PM	8.9	A	8.9	A
McCarthy Blvd and Sumac Dr (unsignalized) ²	AM	27.9	D	Sat.	F
	PM	46.8	E	Sat.	F
McCarthy Blvd and Murphy Ranch Rd (unsignalized) ²	AM	11.3	B	11.5	B
	PM	11.1	B	12.6	B
Zanker Rd and Tasman Dr	AM	34.3	C	36.0	D
	PM	35.7	D	43.8	D

* Denotes CMP intersection

¹ LOS for all-way stop intersection is based on the average of all movements.

² LOS for unsignalized intersection is based on worst leg.

Note: Sat. represents that the intersection is saturated and the delays are not meaningful.

4.

Project Impacts and Mitigation Measures

This chapter describes project traffic conditions, significant project impacts, and measures that are recommended to mitigate project impacts. Included are descriptions of the significance criteria that define an impact, estimates of project-generated traffic, identification of the impacts, and descriptions of the mitigation measures. Project conditions are represented by background traffic conditions with the addition of traffic generated by the project.

Significant Impact Criteria

Significance criteria are used to establish what constitutes an impact. For this analysis there are two sets of relevant criteria for impacts on intersections and freeways. These are based on: (1) the City's of Milpitas and San Jose intersection Level of Service standards and (2) the CMP intersection Level of Service standards.

City's of Milpitas and San Jose Definition of Significant Intersection LOS Impacts

The project is said to create a significant adverse LOS impact on traffic conditions at an intersection in the City's of Milpitas and San Jose if for either peak-hour:

1. The level of service at the intersection degrades from an acceptable LOS D or better under background conditions to an unacceptable LOS E or F under project conditions, or
2. The level of service at the intersection is an unacceptable LOS E or F under background conditions **and** the addition of project trips causes both the critical-movement delay at the intersection to increase by four or more seconds and the demand-to-capacity ratio (V/C) to increase by .01 or more.

An exception to this rule applies when the addition of project traffic reduces the amount of average stopped delay for critical movements (i.e. the change in average stopped delay for critical movements is negative). In this case, the threshold of significance is an increase in the critical V/C value by .01 or more.

A significant impact by the City's of Milpitas and San Jose standards is said to be satisfactorily mitigated when measures are implemented that would restore intersection level of service to background conditions or better.

CMP Definition of Significant Intersection Impacts

The definition of a significant impact at a CMP intersection is the same as for the City's of Milpitas and San Jose, except that the CMP standard for acceptable level of service at a CMP intersection is LOS E or better. A significant impact by CMP standards is said to be satisfactorily mitigated when measures are implemented that would restore intersection conditions to background conditions or better.

CMP Definition of Significant Freeway Segment Impacts

The CMP defines an acceptable level of service for freeway segments as LOS E or better. A project is said to create a significant adverse impact on traffic conditions on a CMP freeway segment if for either peak hour:

1. The level of service on the freeway segment degrades from an acceptable LOS E or better under existing conditions to an unacceptable LOS F under project conditions, or
2. The level of service on the freeway segment is an unacceptable LOS F under project conditions and the number of project trips on that segment constitutes at least one percent of capacity on that segment.

A significant impact by CMP standards is said to be satisfactorily mitigated when measures are implemented that would restore freeway conditions to better than background conditions.

Transportation Network Under Project Conditions

It is assumed in this analysis that the near-term roadway network under project conditions would be the same as described under background conditions, except at the project entrance where the proposed project would add a fourth leg to the Murphy Ranch Road and Sumac Drive intersection.

Project Trip Estimates

The magnitude of traffic produced by a new development and the locations where that traffic would appear are estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In determining project trip generation, the magnitude of traffic entering and exiting the site is estimated for the AM and PM peak hours. As part of the project trip distribution, an estimate is made of the directions to and from which the project trips would travel. In the project trip assignment, the project trips are assigned to specific streets and intersections. These procedures are described further in the following sections.

Trip Generation

Through empirical research, data have been collected that correlate to common land uses their propensity for producing traffic. Thus, for the most common land uses there are standard trip generation rates that can be applied to help predict the future traffic increases that would result from a new development. The magnitude of traffic added to the roadway system by a particular development is estimated by multiplying the applicable trip generation rates to the size of the development. The standard trip generation rates for residential developments are based on those recommended by the San Diego Association of Governments (SANDAG). The project trip generation estimates are presented in Table 8. It is estimated that the project would generate 4,524 daily vehicle trips, with 362 vehicle trips occurring during the AM peak hour and 430 vehicle trips during the PM peak hour.

Table 8
Project Trip Generation Estimates

Land Use	Size ¹	Daily Rate	Daily Trips	AM Peak Hour			PM Peak Hour				
				Pk-Hr Rate	In	Out	Total	Pk-Hr Rate	In	Out	Total
Residential											
Multi-family ²	285	8.0	2,280	0.64	36	146	182	0.8	160	68	228
Apartments ³	374	6.0	2,244	0.48	36	144	180	0.54	141	61	202
Total Residential	659		4,524		72	290	362		301	129	430

Note: Numbers may not add due to rounding

¹ Residential size expressed in number of units.

² Source: Residential, Condominium (or any multi-family 6-20 DU/acre). San Diego Association of Governments (SANDAG) *Trip Generation Rates*, April 2002.

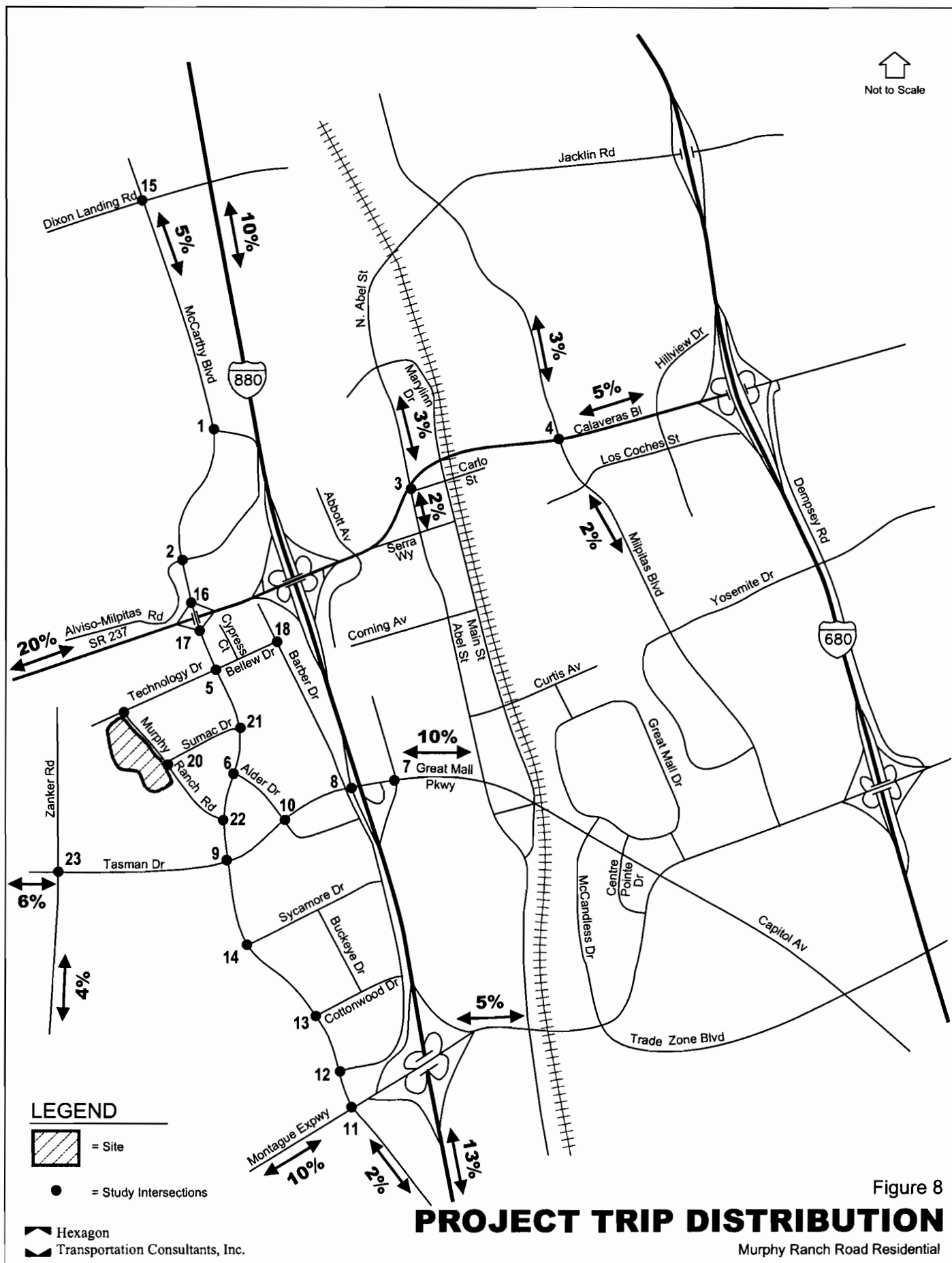
³ Source: Residential, Apartment (or any multi-family units more than 20 DU/acre). San Diego Association of Governments (SANDAG) *Trip Generation Rates*, April 2002.

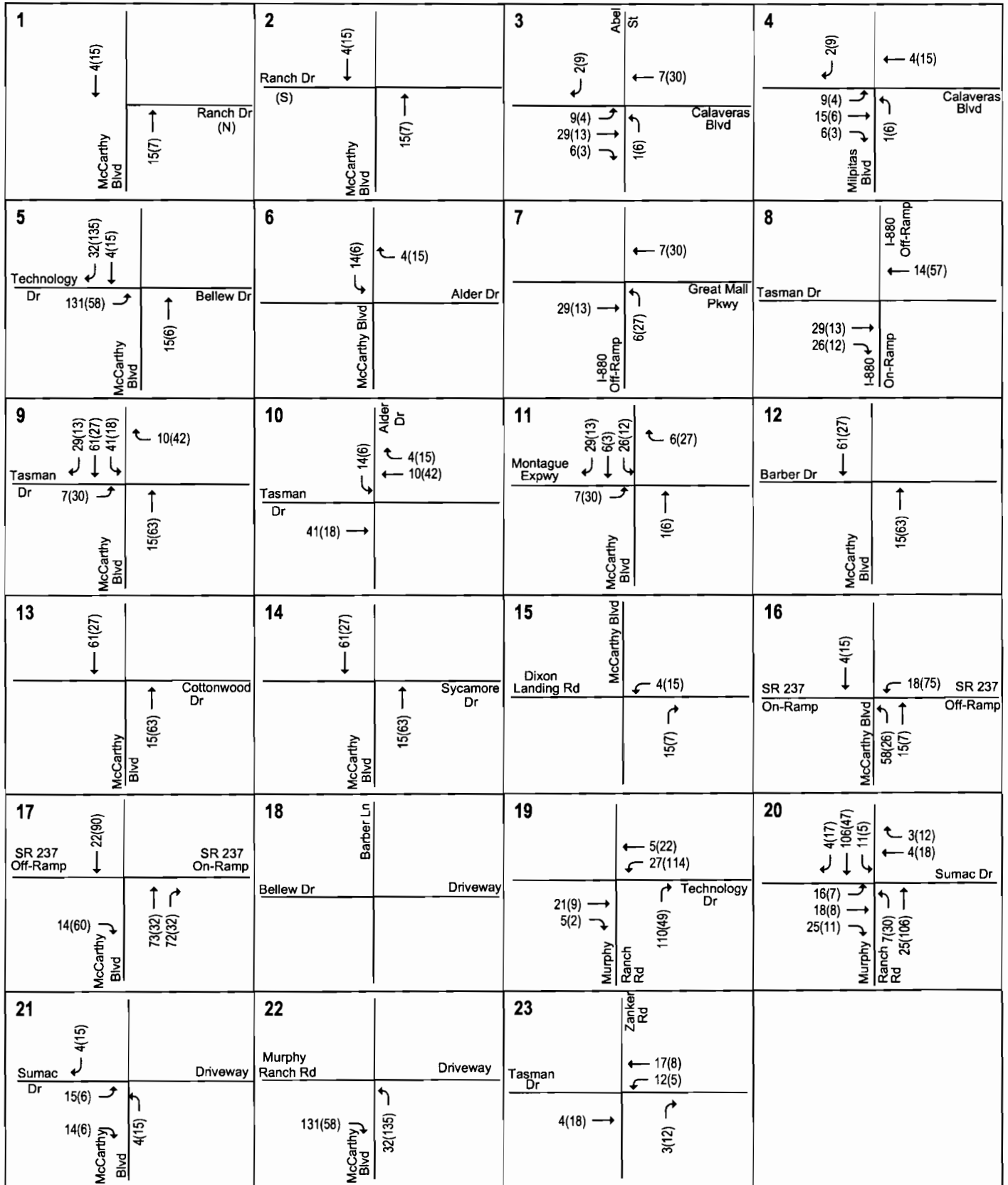
Trip Distribution & Assignment

The trip distribution pattern for the proposed project was based on a select zone analysis from the VTA CMP year 2030 TDF model, existing travel patterns, and the relative locations of complementary land uses. The trip distribution pattern is shown graphically on Figure 8. The peak-hour trips generated by the proposed development were assigned to the roadway system in accordance with the trip distribution pattern discussed above. Figure 9 shows the project trip assignment.

Project Traffic Volumes

Project trips, as represented in the above project trip assignment, were added to background traffic volumes to obtain background plus project traffic volumes. Background traffic volumes plus project trips are typically referred to simply as *project traffic volumes*; this is contrasted with the term *project trips*, which is used to signify the traffic that is produced specifically by the project. The project traffic volumes are shown graphically on Figure 10. Traffic volumes for all components of traffic are tabulated in Appendix C.





Legend

XX(XX) = AM(PM) Peak-Hour Traffic Volumes



Hexagon

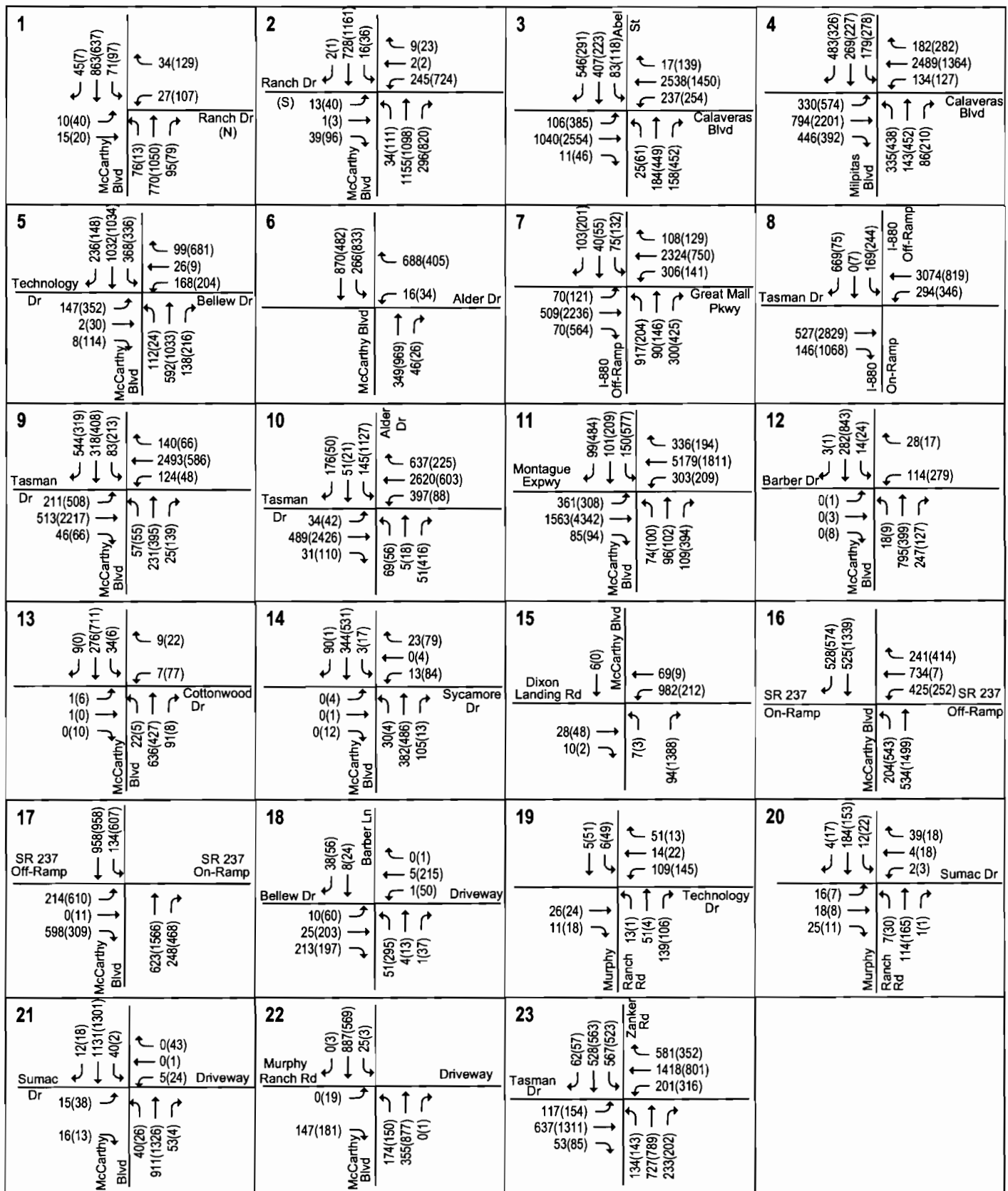


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PROJECT TRIP ASSIGNMENT

Murphy Ranch Road Residential

Figure 9



Legend

XX(XX) = AM(PM) Peak-Hour Traffic Volumes



Transportation Consultants, Inc.

PROJECT TRAFFIC VOLUMES

Murphy Ranch Road Residential

Figure 10

Intersection Level of Service Analysis

The results of the level of service analysis under project conditions are summarized in Table 9. The level of service calculation sheets are included in Appendix D. Under project conditions, the results show that five of the study intersections would operate at an unacceptable LOS measured against the City of Milpitas and CMP level of service guidelines. The intersection of Milpitas Boulevard/SR 237 (Calaveras Blvd) would operate at LOS F during the AM peak hour. The intersection of McCarthy Boulevard/Tasman Drive would operate at LOS E during the AM peak hour. The intersection of Alder Drive/Tasman Drive would operate at LOS F during the PM peak hour. The intersection of Montague Expressway/McCarthy Boulevard-O'Toole Avenue would operate at LOS F during the PM peak hour. The unsignalized intersection of McCarthy Boulevard/Sumac Drive would operate at LOS F during both the AM and PM peak hours. The remaining study intersections would operate at an acceptable LOS D or better.

Significant Impact: The intersection of McCarthy Boulevard/Tasman Drive would operate at LOS D under background conditions. Under project conditions it would operate at LOS E. According to the City of Milpitas guidelines, this would constitute a significant impact.

Mitigation: To mitigate this impact, southbound McCarthy Boulevard would need to be re-stripped from the existing two left-turn lanes, one through lane, and one shared right/through lane to two left-turn lanes, one through lane, and one right-turn lane. An overlap phase for the southbound right turn movement would also be included. This mitigation measure would allow the intersection to operate at LOS D during the AM peak hour and LOS C during the PM peak hour.

Table 9
Project Intersection Levels of Service

Intersection	Peak Hour	Existing			Background			Project Conditions			
		Ave. Delay	LOS		Ave. Delay	LOS		Ave. Delay	LOS	Incr. In Crit. Delay	Incr. In V/C
McCarthy Blvd and Ranch Dr (N)	AM	6.6	A		18.7	B		18.7	B	0.0	0.001
	PM	10.8	B		20.2	C		20.2	C	0.1	0.002
McCarthy Blvd and Ranch Dr (S)	AM	16.8	B		19.2	B		19.3	B	0.2	0.005
	PM	22.7	C		43.1	D		44.1	D	2.1	0.005
Abel St and SR 237 (Calaveras Blvd)*	AM	37.3	D		43.1	D		43.3	D	0.3	0.003
	PM	38.2	D		61.7	E		62.2	E	0.8	0.003
Milpitas Blvd and SR 237 (Calaveras Blvd)*	AM	55.8	E		82.3	F		82.9	F	1.2	0.003
	PM	40.0	D		41.9	D		42.2	D	0.5	0.008
McCarthy Blvd and Bellew Dr	AM	19.0	B		27.5	C		28.9	C	0.0	0.001
	PM	33.6	C		50.9	D		54.8	D	7.4	0.039
McCarthy Blvd and Alder Dr	AM	11.6	B		15.5	B		15.2	B	0.0	0.003
	PM	16.7	B		53.2	D		54.2	D	1.8	0.004
I-880 NB and Great Mall Pkwy	AM	24.6	C		44.4	D		45.1	D	1.0	0.003
	PM	19.3	B		29.1	C		29.2	C	0.1	0.003
I-880 SB and Tasman Dr	AM	13.6	B		22.7	C		22.9	C	0.1	0.003
	PM	13.1	B		27.1	C		27.3	C	1.7	0.007
McCarthy Blvd and Tasman Dr	AM	31.9	C		53.1	D		57.9	E	7.3	0.023
	PM	24.6	C		35.5	D		36.8	D	1.0	0.012
Alder Dr and Tasman Dr	AM	14.9	B		21.4	C		21.7	C	0.0	0.002
	PM	36.9	D		131.9	F		132.9	F	2.5	0.006
McCarthy Blvd/O'Toole and Montague Expwy*	AM	41.9	D		59.5	E		60.7	E	1.6	0.012
	PM	60.5	E		133.6	F		137.4	F	3.7	0.008
McCarthy Blvd and Barber Ln	AM	9.8	A		9.6	A		9.7	A	0.0	0.005
	PM	19.7	B		20.6	C		20.8	C	0.2	0.009
McCarthy Blvd and Cottonwood Dr	AM	13.0	B		15.4	B		15.6	B	0.1	0.005
	PM	15.5	B		16.1	B		16.4	B	0.1	0.009
McCarthy Blvd and Sycamore Dr	AM	10.6	B		9.9	A		10.9	B	1.0	0.006
	PM	13.1	B		12.2	B		12.2	B	-0.2	0.009
McCarthy Blvd and Dixon Landing Rd	AM	11.8	B		13.8	B		14.1	B	0.0	0.001
	PM	9.5	A		10.6	B		10.9	B	0.3	0.003

Table 9 (continued)
Project Intersection Levels of Service

SR 237 and McCarthy Blvd (W)	AM	15.2	B	15.2	B	15.2	B	15.5	B	0.4	0.022
	PM	16.6	B	19.6	B	19.6	B	20.2	C	1.1	0.013
SR 237 and McCarthy Blvd (E)	AM	15.2	B	16.8	B	16.8	B	17.0	B	1.0	0.040
	PM	15.7	B	19.4	B	19.4	B	20.1	C	0.7	0.016
Barber Ln and Bellew Dr	AM	12.6	B	12.6	B	12.6	B	12.6	B	0.0	0.000
	PM	18.6	B	18.6	B	18.6	B	18.6	B	0.0	0.000
Murphy Ranch Rd and Technology Dr (unsignalized) ¹	AM	7.7	A	7.7	A	7.7	A	8.2	A	0.6	0.071
	PM	7.4	A	7.4	A	7.4	A	8.2	A	0.9	0.115
Murphy Ranch Rd and Sumac Dr (unsignalized) ²	AM	8.9	A	8.9	A	8.9	A	10.9	B	-	-
	PM	8.9	A	8.9	A	8.9	A	11.2	B	-	-
McCarthy Blvd and Sumac Dr (unsignalized) ²	AM	27.9	D	Sat.	D	Sat.	F	Sat.	F	-	-
	PM	46.8	E	Sat.	E	Sat.	F	Sat.	F	-	-
McCarthy Blvd and Murphy Ranch Rd (unsignalized) ²	AM	11.3	B	11.5	B	11.5	B	13.5	B	-	-
	PM	11.1	B	12.6	B	12.6	B	14.0	B	-	-
Zanker Rd and Tasman Dr	AM	34.3	C	36.0	D	36.0	D	36.5	D	0.8	0.005
	PM	35.7	D	43.8	D	43.8	D	44.8	D	1.7	0.007

* Denotes CMP intersection

 - Denotes project impact.

¹ LOS for all-way stop intersection is based on the average of all movements.

² LOS for unsignalized intersection is based on worst leg.

Note: Sat. represents that the intersection is saturated and the delays are not meaningful.

North San Jose Deficiency Plan Analysis

Under background conditions using only San Jose's Approved Trips (as specified by San Jose), the 22-intersection average delay was 77 seconds. With the addition of project traffic, the 22-intersection average would remain at 77 seconds. This information is summarized in Table 10 and Appendix D. According to the NSJDP impact criteria, the proposed project would not have an impact on the North San Jose Deficiency Plan, and therefore, mitigation would not be required.

Table 10
North San Jose Deficiency Plan Intersection Levels of Service (PM Peak Hour)

Intersection	Background		Project	
	Avg. Delay /a/	LOS	Avg. Delay /a/	LOS
SR 237/North First Street (N)	113	/b/ F	113	/b/ F
SR 237/North First Street (S)	80	F	80	F
North First Street/Trimble Road	80	E	80	E
North First Street/Brokaw Road	151	F	151	F
I-880/North First Street (N)	17	B	17	B
I-880/North First Street (S)	18	B	18	B
SR 237/Zanker Road (N)	12	B	12	B
SR 237/Zanker Road (S)	18	B	18	B
Zanker Road/Trimble Road	121	F	121	F
Zanker Road/Brokaw Road	65	E	65	E
Montague Expressway/North First Street	154	F	154	F
Montague Expressway/Zanker Road	86	F	86	F
Montague Expressway/Trimble Road	144	F	144	F
Montague Expressway/McCarthy Boulevard	141	F	143	F
Montague Expressway/Old Oakland Road	100	F	100	F
Montague Expressway/Trade Zone Boulevard	84	F	84	F
Trimble Road/De La Cruz Boulevard	136	F	136	F
U.S. 101/Brokaw Road	34	C	34	C
I-880/Brokaw Road (W)	36	D	36	D
I-880/Broakw Road (E)	18	B	18	B
Brokaw Road/Old Oakland Road	49	D	49	D
Murphy Avenue/Lundy Avenue	43	D	43	D
Average	77	E	77	E

/a/ Whole intersection weighted average stopped delay expressed in seconds per vehicle.

/b/ Intersection delay is capped at 150% of the cycle length.

Project Freeway Segment Analysis

Traffic volumes on the study freeway segments under project conditions were estimated by adding project trips to the existing volumes obtained from the 2004 CMP Annual Monitoring Report. The results of the freeway analysis are summarized in Table 11. The results show that the project would not cause a significant increase in traffic volume (more than one percent of capacity) on any of the study freeway segments.

Table 11
Project Freeway Level of Service Analysis

Freeway Segment	Existing Plus Project Trips					Project Trips					
	Direction	Peak Hour	Ave. Speed/a/	Mixed-Flow			Total Volume	Mixed-Flow		Capacity	Impact?
				Lanes/a/	Volume/a/	Density		LOS	Volume		
I-880 Brokaw Rd to Montague Expwy	NB	AM	65	3	5,859	30.0	D	9	9	0.1%	NO
I-880 Brokaw Rd to Montague Expwy	NB	PM	66	3	4,397	22.2	C	37	37	0.5%	NO
I-880 Montague Expwy to Great Mall Pkwy	NB	AM	66	3	5,156	26.0	C	6	6	0.1%	NO
I-880 Montague Expwy to Great Mall Pkwy	NB	PM	66	3	5,176	26.0	C	26	26	0.4%	NO
I-880 Great Mall Pkwy to SR 237	NB	AM	63	3	6,430	34.0	D	0	0	0.0%	NO
I-880 Great Mall Pkwy to SR 237	NB	PM	41	3	6,270	51.0	E	0	0	0.0%	NO
I-880 SR 237 to Dixon Landing Rd	NB	AM	66	4	5,728	21.7	C	28	28	0.3%	NO
I-880 SR 237 to Dixon Landing Rd	NB	PM	15	4	5,142	85.7	F	12	12	0.1%	NO
SR 237 Zanker Rd to McCarthy Blvd	EB	AM	66	2	3,714	28.1	D	14	14	0.3%	NO
SR 237 Zanker Rd to McCarthy Blvd	EB	PM	61	2	4,448	36.5	D	58	58	1.3%	NO
I-880 Dixon Landing Rd to SR 237	SB	AM	65	4	7,027	30.0	D	7	7	0.1%	NO
I-880 Dixon Landing Rd to SR 237	SB	PM	66	4	5,729	24.1	C	29	29	0.3%	NO
I-880 SR 237 to Great Mall Pkwy	SB	AM	66	3	5,540	28.0	D	0	0	0.0%	NO
I-880 SR 237 to Great Mall Pkwy	SB	PM	66	3	4,750	24.0	C	0	0	0.0%	NO
I-880 Great Mall Pkwy to Montague Expwy	SB	AM	66	3	5,375	27.1	D	25	25	0.4%	NO
I-880 Great Mall Pkwy to Montague Expwy	SB	PM	39	3	6,211	53.1	E	11	11	0.2%	NO
I-880 Montague Expwy to Brokaw Rd	SB	AM	66	3	4,986	25.2	C	36	36	0.5%	NO
I-880 Montague Expwy to Brokaw Rd	SB	PM	21	3	5,116	81.2	F	16	16	0.2%	NO
SR 237 McCarthy Blvd to Zanker Rd	WB	AM	11	3	3,165	95.9	F	55	55	0.8%	NO
SR 237 McCarthy Blvd to Zanker Rd	WB	PM	25	3	4,585	61.1	F	25	25	0.4%	NO

/a/ Source: Santa Clara Valley Transportation Authority Congestion Management Program Monitoring Study, 2004.

5.

Other Transportation Impacts

This chapter presents other transportation issues associated with the project. These include an analysis of:

- Impacts to bicycles and pedestrians;
- Impacts to transit facilities;
- Site access, circulation and parking; and
- Unsignalized intersections.

Unlike the level of service impact methodology, which is adopted by the City Council, the analysis below is based on professional judgement in accordance with the standards and methods employed by the traffic engineering community.

Pedestrians and Bicycles

Existing bicycle and pedestrian access to the site is provided by a series of sidewalks and bike lanes on McCarthy Boulevard, Tasman Drive, and Barber Drive. Bikes are also permitted to use the shoulder area of Montague Expressway. Although the streets within the project would not contain bike lanes, the traffic volumes and vehicle speeds would be sufficiently low that shared use of the roadway between bikes and motor vehicles would be feasible.

The pedestrian trips are not expected to exceed the carrying capacity of sidewalks along the site frontage or of sidewalks on streets surrounding the site. The increase in pedestrian trips is not expected to require new sidewalks, other than those already planned as part of the project. The existing pedestrian facilities and the proposed on-site sidewalks and walkways would be adequate to accommodate all pedestrian traffic on and around the project site.

Recommendation: The project proponent should provide ADA compliant sidewalks, wheelchair ramps, and lighting along the project frontage.

Transit Impacts

The current transit service in the project vicinity consists of VTA operated bus routes and VTA light rail service. Field observations have shown that these facilities operate within capacity. Although the proposed project would increase the demand for such facilities in the vicinity of the site, the addition on these trips would not result in a demand for transit service greater than what is currently being provided. The current network of sidewalks and crosswalks would be sufficient for proposed project occupants to access transit service in the project vicinity.

Residents of the proposed project would reside approximately seven-tenths of a mile from the I-880/Milpitas light rail station. The close proximity of the LRT station would increase the likelihood that future residents of the proposed project would ride transit. However, the incremental impact of the proposed project on system-wide ridership would be minimal.

Recommendation: The project proponent should coordinate with VTA to determine whether any modifications to bus stop locations would be required as a result of the project.

Site Access, Circulation, and Parking

This section describes the site access, circulation, and parking aspects of the proposed residential project. This review is based on a project site plan supplied to Hexagon on April 3, 2006.

Site Access

The proposed site plan shows three project driveways on Murphy Ranch Road and one project driveway on Technology Drive. There also would be an emergency access only driveway on Murphy Ranch Road. Driveways A and B would be located on Murphy Ranch Road and would provide access to the townhome development. Driveway C would be located on Murphy Ranch Road and would provide access to the six-story parking garage of the apartment complex. Driveway D would be located on Technology Drive approximately 340 feet west of Murphy Ranch Road. It would provide direct access to the apartment parking garage via the north side of the project site. All project driveways would contain one inbound lane and one outbound lane. The project driveways are shown on Figure 11.

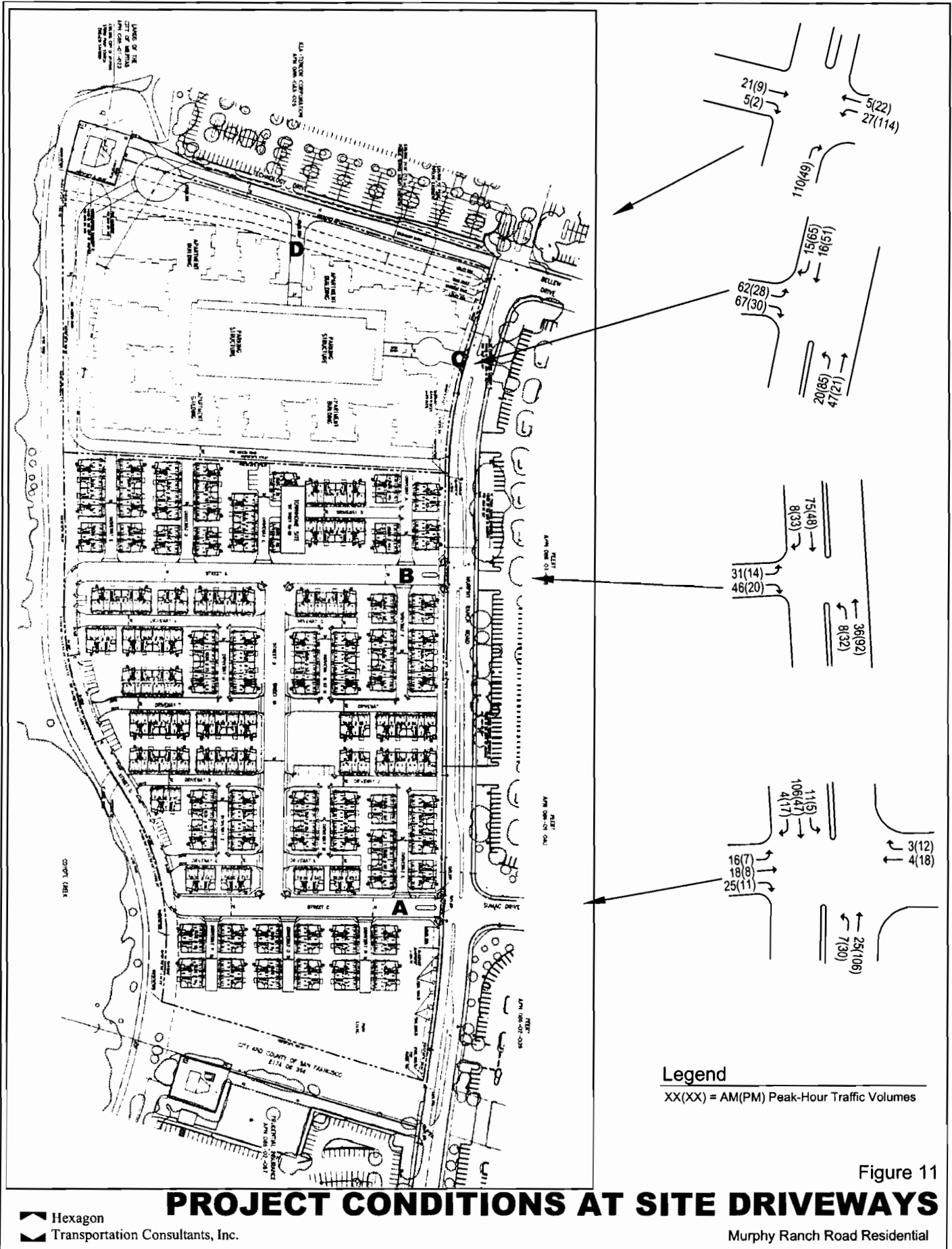
The traffic volumes on Murphy Ranch Road are relatively low and project traffic would experience little delay upon entering or exiting the site. Outbound vehicle queues at the project driveways would rarely exceed two vehicles.

ITE standards for design and location of driveways are described below.

- Widths between 30 to 40 feet and 15-foot radii (driveways with low-volume activity may have widths of 24 feet, providing that 20-foot radii are used).
- Spacing of at least 35 feet apart.
- 51-150 feet of frontage for two driveways, 151-500 feet for 3 driveways.

Based on the current site plan, the project would meet these criteria with the following exceptions.

- Project driveway curb radii are not shown on the apartment site plan.



- The alignment of the proposed project driveway at the northern end of the townhome site is slightly offset from the existing driveway on the opposite side of the street. Generally, it is desirable for all opposing roadways to line up at their centerlines, or be offset sufficiently to allow for proper vehicle channelization. At intersections that are not properly aligned, the travel paths of left-turns could conflict (i.e. the travel paths of opposing left-turns occupy the same physical space). However, it appears that the alignment would be adequate to allow for safe travel paths. The bulb-noses of the proposed medians should be further evaluated to ensure adequate space is provided to allow for safe left-turns into the sites.

Some general recommendations for the current site plan are as follows.

- In order to ensure there would be sufficient sight distance at the project driveways, it would be necessary to maintain some of the existing parking prohibitions on-street along the site frontages in the vicinity of the driveways. Any landscaping, parking, and signage should be located in such a way to ensure an unobstructed view for drivers exiting the site.
- The proposed project would increase significantly the number of vehicle trips on the west leg of the Murphy Ranch Road/Technology Drive intersection. Currently, the west leg of the Murphy Ranch Road/Technology Drive intersection is poorly aligned with the east leg. In conjunction with the proposed project, improvements to the existing alignment should be considered.

On-Site Circulation

The townhome site's street layout would consist of four primary roads. Two roadways would run east/west and link the project driveways to Murphy Ranch Road. Two roadways would run north/south between the two east/west roadways. The apartment portion of the project would contain a multilevel parking structure. However, the layout is not shown on the current site plan.

The townhome plan shows several dead-end aisles. Dead-end aisles are undesirable because drivers can enter the aisle, and upon discovering that there is no available parking, must back out or conduct three-point turns. In areas where parking spaces are designated for specific individuals, dead-end aisles are less problematic. Generally, turn-arounds should be provided in residential developments when needed for emergency vehicles, garbage collection, or visitor parking.

Parking

According to City requirements, the apartment portion of the site would be designated R-4. The City of Milpitas parking standards for multi-family very high-density districts (R-4) are as follows:

- One Bedroom = 176 units x 1.5 spaces = 264 spaces.
- Two Bedrooms = 178 units x 2 spaces = 356 spaces.
- Three Bedrooms = 20 units x 2 spaces = 40 spaces.
- Guest = 660 spaces x 15% = 99 spaces.
- Total parking required per Milpitas = 759 spaces.

For the apartment portion of the site, the site plan notes shows 660 residential parking spaces and 99 guest parking spaces for a total of 759. This is equal to the 759 total parking spaces required by the City of

Milpitas. The project applicant will need to provide a more detailed site plan showing the location of the on-site parking.

According to City requirements, this portion of the site would be designated R-3. The City of Milpitas parking standards for multi-family high-density districts (R-3) are as follows:

- Townhomes = 285 units x 2 spaces = 570 spaces.
- Guest = 570 spaces x 20% = 114 spaces.
- Total parking required per Milpitas = 684 spaces.

According to the site plan notes, the townhome development would consist of 570 off-street resident spaces and 118 guest spaces for a total of 688 spaces. However, the current level of detail on the site plan shows only 33 on-street spaces distributed throughout the site. Due to insufficient detail on the current site plan, it is unclear where additional on-site parking would be provided.

Signal Warrant Analysis

The peak-hour signal warrant was checked for the four unsignalized intersections to determine whether signalization would be justified on the basis of project peak-hour volumes. The analysis showed that under project conditions the intersection of McCarthy Boulevard and Murphy Ranch Road would meet the signal warrant during the PM peak hour. The other three unsignalized study intersections do not meet the peak-hour volume warrant. The signal warrant analysis is summarized in Table 12 and included in Appendix E.

The two primary unsignalized intersections that project traffic would use to access McCarthy Boulevard are Murphy Ranch Road/McCarthy Boulevard and Sumac Drive/McCarthy Boulevard. Under project conditions, the traffic volume on Sumac Drive would not be sufficient to warrant a traffic signal. However, the minor street approach is projected to operate at a poor LOS. The intersection of Murphy Ranch Road/McCarthy Boulevard would warrant a signal during the PM peak hour. Given the number of vehicle trips at the subject intersections and the layout of the street network, only one traffic signal would be necessary. Since a traffic signal already exists to the north of the project site at Technology Drive/McCarthy Boulevard, it is recommended that a traffic signal be installed at the intersection of Murphy Ranch Road/McCarthy Boulevard to facilitate project access to the south.

The City of Milpitas requested that all-way stop control be evaluated for the intersection of Sumac Drive and Murphy Ranch Road. This assessment was made on the basis of the "Multway Stop Applications" section (Section 2B.07) of the *2003 Manual on Uniform Traffic Control Devices (MUTCD)*. This method makes no evaluation of intersection level of service, but simply provides an indication whether the traffic conditions would be sufficient to justify installation of all-way stop control. One of the criteria of the warrant states that the intersection minor street approaches must average at least 200 movements per hour for 8 hours. During the highest hour of the day at the intersection, under project conditions, the total of the minor street approaches would be only 104 vehicles per hour. Thus, the warrant would not be satisfied.

Table 12
Peak Hour Signal Warrant Summary

	AM Peak Hour			PM Peak Hour		
	Existing	Background	Project	Existing	Background	Project
Major Street: McCarthy Blvd total of both approaches -VPH	1518	2179	2187	1848	2647	2677
Minor Street: Sumac Dr highest volume approach -VPH	5	5	31	68	68	68
Major Street: McCarthy Blvd total of both approaches -VPH	1189	1409	1441	1202	1468	1603
Minor Street: Murphy Ranch Rd highest volume approach -VPH	16	16	147	142	142	200
Major Street: Murphy Ranch Rd total of both approaches -VPH	153	153	211	162	162	211
Minor Street: Technology Dr highest volume approach -VPH	93	93	203	44	44	180
Major Street: Murphy Ranch Rd total of both approaches -VPH	169	169	322	183	183	388
Minor Street: Sumac Dr highest volume approach -VPH	38	38	59	9	9	39
Bold Denotes: Meets Signal Warrant						

6.

Cumulative Conditions

This chapter presents a summary of the traffic conditions that would occur under cumulative conditions. The analysis of cumulative conditions was conducted based on projected roadway link volumes using year 2030 land use data. AM and PM peak hour volumes were developed using the Valley Transportation Authority (VTA) Congestion Management Program (CMP) year 2030 Travel Demand Forecast (TDF) model. All *Existing General Plan* traffic volumes for year 2030 were supplied by the City of Milpitas.

Project Impact Criteria

For cumulative conditions, the traffic operations at the study segments were evaluated based on the volume-to-capacity ratio, which can be correlated to a level of service. Under cumulative conditions, a project is said to adversely impact a roadway segment if:

- The roadway segment is projected to operate below its LOS standard under the existing general plan and the proposed general plan change is projected to cause an increase in traffic of at least one percent of its capacity. **Or**
- The roadway segment is projected to operate at or better than its LOS standard under the existing general plan and the proposed general plan change is projected to degrade the level of service to less than acceptable levels.

On roadway segments under cumulative conditions, a project is said to benefit a roadway segment if:

- The roadway segment is projected to operate below its LOS standard under the existing general plan and the proposed general plan change is projected to cause a decrease in traffic of at least one percent of its capacity.

For CMP roadway segments, the minimum acceptable level of service is LOS E. At roadway segments in Milpitas that are not CMP roadway segments, the minimum acceptable level of service is LOS D. Calaveras Boulevard, Montague Expressway, I-880, and SR 237 are the only CMP roadways analyzed for this study.

2030 Network Assumptions

The year 2030 roadway network includes planned transportation improvements. The improvements included in the VTA CMP TDF model have a high probability of receiving funding in the future. Within the study area, the following improvements were included:

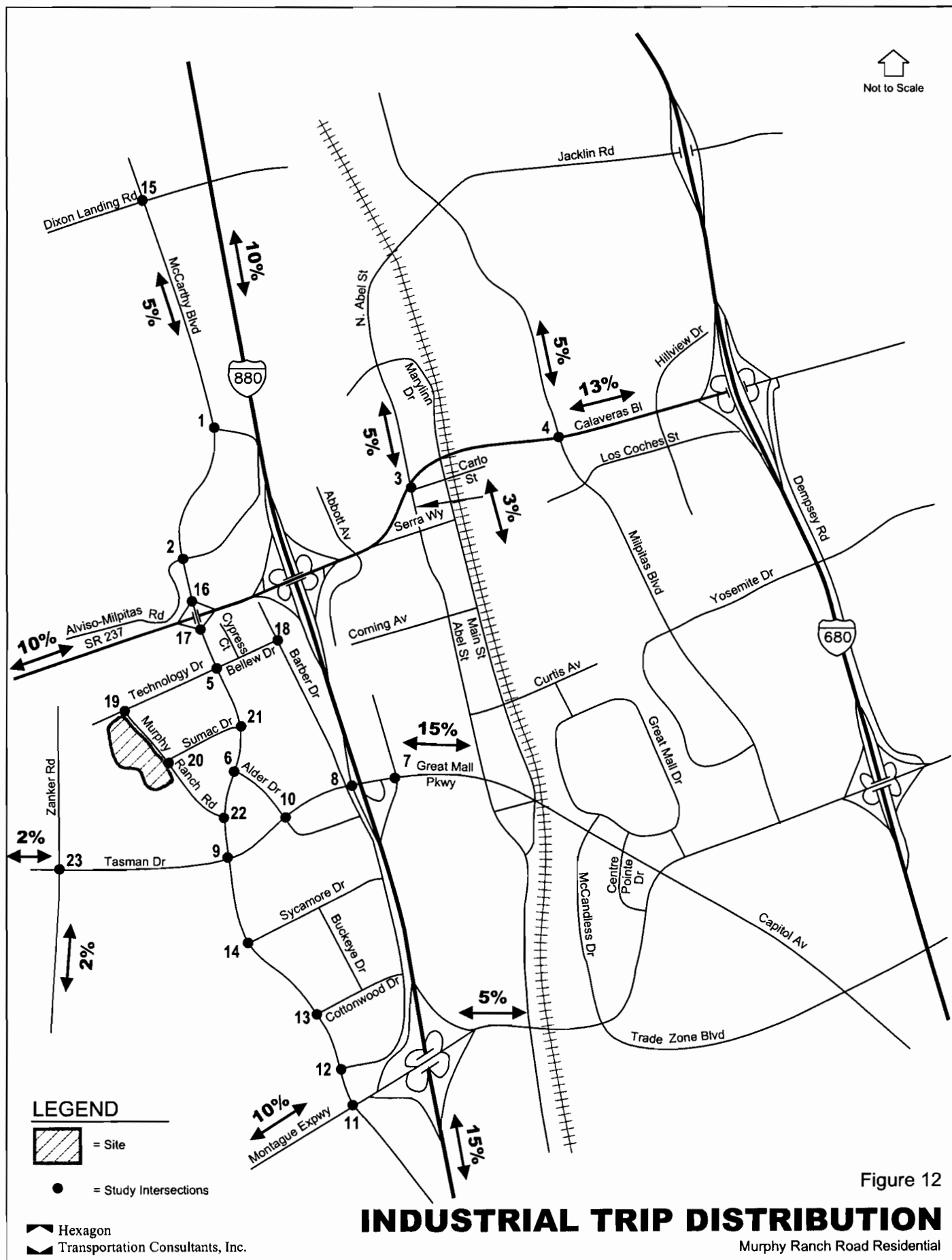
- **I-880 Widening Projects.** I-880 will be widened to include a high occupancy vehicle lane and auxiliary lane in each direction from Montague Expressway north into Alameda County.
- **Fremont Boulevard Extension to Dixon Landing Road.** Fremont Boulevard will be extended southward from its current terminus near Lakeview Drive to Dixon Landing Road. The Fremont Boulevard extension will include two lanes in each direction and will form the forth leg of the McCarthy Boulevard/Dixon Landing Road intersection. Fremont Boulevard Extension is a City of Fremont (developer funded) project and will occur when the King-Lyon property develops.
- **Calaveras Boulevard.** Calaveras Boulevard will be widened to six lanes between Milpitas Boulevard and Abel Street. Operational improvements are also planned for intersections on Calaveras Boulevard between I-680 and I-880.
- **Montague Expressway.** Montague Expressway will be widened to provide eight lanes between Great Mall Parkway and I-880. The intersection of Montague Expressway and Great Mall Parkway is planned for grade separation.

Planned improvements outside the study area are described in the VTA Valley Transportation Plan 2030, which is on file with the City of Milpitas. It should be noted that some VTP 2030 projects in the City of Milpitas have been identified for VTP 2030 funding. However, the City is still responsible for the 20 percent local match. Therefore, additional monetary contributions for these projects are necessary.

Year 2030 Traffic Volumes

The proposed project would convert the project site from an industrial designation in the existing General Plan to a residential designation. This would require a General Plan Amendment (GPA). Currently, the site is vacant. However, for the purposes of estimating the change in the General Plan designation, the traffic impacts of the project were evaluated relative to the current General Plan designation, as opposed to what is currently occupying the site. The current General Plan designation was assumed to be 280,000 square feet of industrial use. The traffic estimates for the proposed GPA were produced using a three-step process:

- **Traffic Generation.** A comparison of the trip generation between the proposed residential project and the existing land use designation is shown in Table 13. The proposed GPA would increase the trip generation from the site by 116 trips during the AM peak hour and 161 trips during the PM peak hour.
- **Traffic Assignment.** Industrial traffic was assigned to the roadway network based on a select zone analysis from the VTA CMP year 2030 TDF model (see Figure 12), existing travel patterns, and the relative locations of complementary land uses. The peak hour trips generated by the proposed residential project were assigned to the roadway network in accordance with the residential trip distribution pattern shown in Figure 8.



- **Traffic Volume Tabulation.** For each roadway link, the projected peak hour traffic volumes with the proposed GPA were estimated by subtracting the trips generated by the industrial designation from the existing General Plan traffic volumes, and adding the estimated traffic generated by the proposed residential land use.

Table 13
Trip Generation - Proposed GPA

Land Use	Size ¹	Daily Rate	Daily Trips	AM Peak Hour				PM Peak Hour			
				Pk-Hr Rate	In	Out	Total	Pk-Hr Rate	In	Out	Total
Residential											
Multi-family ²	285	8.0	2,280	0.64	36	146	182	0.8	160	68	228
Apartments ³	374	6.0	2,244	0.48	36	144	180	0.54	141	61	202
Total Residential	659		4,524		72	290	362		301	129	430
Future Industrial Park ⁴	280	8.0	2,240	0.88	222	25	246	0.96	54	215	269
Net Project Trips			2,284		-149	265	116		247	-86	161

Note 1: Numbers may not add due to rounding

Note 2: Net Project Trips are used for informational purposes only, the actual trip generations were assigned and then subtracted at the intersection levels.

¹ Residential size expressed in number of units; industrial size expressed in 1,000 square feet.

² Source: Residential, Condominium (or any multi-family 6-20 DU/acre). San Diego Association of Governments (SANDAG) *Trip Generation Rates*, April 2002.

³ Source: Residential, Apartment (or any multi-family units more than 20 DU/acre). San Diego Association of Governments (SANDAG) *Trip Generation Rates*, April 2002.

⁴ Source: Industrial, Industrial Park (no commercial). San Diego Association of Governments (SANDAG) *Trip Generation Rates*, April 2002.

Year 2030 Traffic Impacts

GPA conditions were evaluated relative to the existing General Plan in order to determine potential impacts. The impacts of the proposed General Plan change are summarized on Tables 14 and 15. According to City of Milpitas and CMP standards, the proposed GPA would not create any adverse significant impacts.

The proposed GPA would have a beneficial impact on *eight* roadway segments during the AM and PM peak hours. Thus, the proposed GPA would predominately benefit overall traffic operations in the area relative to the existing general plan. This is primarily because the residential trips generated by the GPA would be located in close proximity to the surrounding employment uses, thereby shortening trips for commuters.

Table 15
Year 2030 PM Peak-Hour LOS

Segment			Dir	2004	Existing 2030 General Plan				Proposed 2030 GPA					
From	To	Vol		Vol	Capacity	V/C	LOS	GPA Trips	Vol	V/C	LOS	% Inc	Impact?	
Interstate 880														
Dixon Landing Road	Calaveras Boulevard	SB	5,700	8,800	11,000	0.80	D	24	8,824	0.80	D	0.22%	N	
Calaveras Boulevard	Great Mall Parkway	SB	4,750	6,650	9,000	0.74	C	0	6,650	0.74	C	0.00%	N	
Great Mall Parkway	Montague Expressway	SB	5,350	6,850	7,000	0.98	E	-10	6,840	0.98	E	-0.14%	N	
Montague Expressway	Brokaw Road	SB	4,950	6,210	6,000	1.04	F	-15	6,195	1.03	F	-0.25%	N	
Brokaw Road	Montague Expressway	NB	5,850	6,780	6,000	1.13	F	31	6,811	1.14	F	0.52%	N	
Montague Expressway	Great Mall Parkway	NB	5,150	7,900	7,000	1.13	F	22	7,922	1.13	F	0.31%	N	
Great Mall Parkway	Calaveras Boulevard	NB	3,920	7,000	7,000	1.00	F	0	7,000	1.00	F	0.00%	N	
Calaveras Boulevard	Dixon Landing Road	NB	7,970	11,500	11,000	1.05	F	-9	11,491	1.04	F	-0.08%	N	
State Route 237/Calaveras Blvd.														
N. First Street	Zanker Road	EB	4430	6,220	6,000	1.04	F	55	6,275	1.05	F	0.92%	N	
Zanker Road	I-880	EB	5310	6,850	6,000	1.14	F	55	6,905	1.15	F	0.92%	N	
I-880	Abbott Avenue	EB	1,270	4,400	4,000	1.10	F	-37	4,363	1.09	F	-0.93%	N	
Abbott Avenue	Abel Avenue	EB	1,250	3,750	3,000	1.25	F	-37	3,713	1.24	F	-1.23%	N	
Abel Avenue	Milpitas Boulevard	EB	1,370	3,550	2,000	1.78	F	-26	3,524	1.76	F	-1.30%	N	
Milpitas Boulevard	Hillview Drive	EB	980	3,400	3,000	1.13	F	-22	3,378	1.13	F	-0.73%	N	
Hillview Drive	I-680	EB	1,100	3,700	3,000	1.23	F	-22	3,678	1.23	F	-0.73%	N	
I-680	Hillview Drive	WB	3,060	2,000	3,000	0.67	B	8	2,008	0.67	B	0.27%	N	
Hillview Drive	Milpitas Boulevard	WB	2,460	1,700	2,500	0.68	B	8	1,708	0.68	B	0.32%	N	
Milpitas Boulevard	Abel Street	WB	2,480	2,100	3,000	0.70	C	20	2,120	0.71	C	0.67%	N	
Abel Street	Abbott Avenue	WB	3,060	2,280	3,000	0.76	C	31	2,311	0.77	C	1.03%	N	
Abbott Avenue	I-880	WB	3,520	2,900	3,000	0.97	E	31	2,931	0.98	E	1.03%	N	
I-880	Zanker Road	WB	3970	6,700	6,000	1.12	F	4	6,704	1.12	F	0.07%	N	
Zanker Road	North First Street	WB	5370	6,050	6,000	1.01	F	4	6,054	1.01	F	0.07%	N	
Montague Expressway														
Trimble Road	McCarthy Boulevard	EB	1,108	5,150	4,400	1.17	F	25	5,175	1.18	F	0.57%	N	
McCarthy Boulevard	I-880	EB	622	5,500	4,400	1.25	F	-10	5,490	1.25	F	-0.23%	N	
I-880	S. Main Street	EB	1,387	6,000	4,400	1.36	F	-4	5,996	1.36	F	-0.09%	N	
S. Main Street	McCandless Drive	EB	1,268	6,200	4,400	1.41	F	-4	6,196	1.41	F	-0.09%	N	
McCandless Drive	Great Mall Parkway	EB	646	5,380	4,400	1.22	F	-4	5,376	1.22	F	-0.09%	N	
Great Mall Parkway	S. Milpitas Boulevard	EB	752	4,910	4,400	1.12	F	-4	4,906	1.12	F	-0.09%	N	
S. Milpitas Boulevard	I-680	EB	424	4,900	4,400	1.11	F	-4	4,896	1.11	F	-0.09%	N	
I-680	S. Milpitas Boulevard	WB	2,816	2,940	4,400	0.67	B	12	2,952	0.67	B	0.27%	N	
S. Milpitas Boulevard	Great Mall Parkway	WB	2,400	2,470	4,400	0.56	A	12	2,482	0.56	A	0.27%	N	
Great Mall Parkway	McCandless Drive	WB	2,306	2,390	4,400	0.54	A	12	2,402	0.55	A	0.27%	N	
McCandless Drive	S. Main Street	WB	2,914	2,880	4,400	0.65	B	12	2,892	0.66	B	0.27%	N	
S. Main Street	I-880	WB	3,339	2,800	4,400	0.64	B	12	2,812	0.64	B	0.27%	N	
I-880	McCarthy Boulevard	WB	2,256	1,950	4,400	0.44	A	22	1,972	0.45	A	0.50%	N	
McCarthy Boulevard	Trimble Road	WB	2,912	1,880	4,400	0.43	A	-6	1,874	0.43	A	-0.14%	N	
Great Mall Parkway/Tasman Dr.														
Cisco Way	McCarthy Boulevard	EB	N/A	3,100	3,000	1.03	F	28	3,128	1.04	F	0.93%	N	
McCarthy Boulevard	I-880	EB	238	2,850	3,000	0.95	E	-29	2,821	0.94	E	-0.97%	N	
I-880	S. Abel Street	EB	317	2,320	3,000	0.77	C	-19	2,301	0.77	C	-0.63%	N	
S. Abel Street	S. Main Street	EB	321	2,210	3,000	0.74	C	-19	2,191	0.73	C	-0.63%	N	
S. Main Street	Montague Expressway	EB	433	3,140	3,000	1.05	F	-19	3,121	1.04	F	-0.63%	N	
Montague Expressway	Trade Zone Boulevard	EB	318	2,960	3,000	0.99	E	-19	2,941	0.98	E	-0.63%	N	
Trade Zone Boulevard	Montague Expressway	WB	928	1,190	3,000	0.40	A	22	1,212	0.40	A	0.73%	N	
Montague Expressway	S. Main Street	WB	1,613	2,230	3,000	0.74	C	22	2,252	0.75	C	0.73%	N	
S. Main Street	S. Abel Street	WB	1,473	1,330	3,000	0.44	A	22	1,352	0.45	A	0.73%	N	
S. Abel Street	I-880	WB	2,032	1,030	3,000	0.34	A	22	1,052	0.35	A	0.73%	N	
I-880	McCarthy Boulevard	WB	2,362	1,300	3,000	0.43	A	44	1,344	0.45	A	1.47%	N	
McCarthy Boulevard	Cisco Way	WB	N/A	1,450	3,000	0.48	A	4	1,454	0.48	A	0.13%	N	
McCarthy Boulevard														
Dixon Landing Road	Ranch Drive	SB	572	1,530	1,800	0.85	D	13	1,543	0.86	D	0.72%	N	
Ranch Drive	Technology Drive	SB	800	1,660	2,700	0.61	B	123	1,783	0.66	B	4.56%	N	
Technology Drive	Alder Drive	SB	969	1,450	1,800	0.81	D	12	1,462	0.81	D	0.67%	N	
Alder Drive	Tasman Drive	SB	847	1,250	1,800	0.69	B	-31	1,219	0.68	B	-1.72%	N	
Tasman Drive	Montague Expressway	SB	246	1,300	1,800	0.72	C	-16	1,284	0.71	C	-0.89%	N	
Montague Expressway	Tasman Drive	NB	835	800	1,800	0.44	A	52	852	0.47	A	2.89%	N	
Tasman Drive	Alder Drive	NB	369	1,130	1,800	0.63	B	113	1,243	0.69	B	6.28%	N	
Alder Drive	Technology Drive	NB	374	1,440	1,800	0.80	D	-5	1,435	0.80	C	-0.28%	N	
Technology Drive	Ranch Drive	NB	524	2,170	2,700	0.80	D	-45	2,125	0.79	C	-1.67%	N	
Ranch Drive	Dixon Landing Road	NB	173	2,230	1,800	1.24	F	-4	2,226	1.24	F	-0.22%	N	
Alder Drive														
McCarthy Boulevard	Tasman Drive	SB	930	1,050	1,400	0.75	C	-10	1,040	0.74	C	-0.71%	N	
Tasman Drive	Barber Lane	SB	530	460	1,400	0.33	A	0	460	0.33	A	0.00%	N	
Barber Lane	Tasman Drive	NB	387	550	1,400	0.39	A	0	550	0.39	A	0.00%	N	
Tasman Drive	McCarthy Boulevard	NB	453	400	1,400	0.29	A	11	411	0.29	A	0.79%	N	
Technology Drive/Bellew Drive														
Murphy Ranch Road	McCarthy Boulevard	EB	26	650	700	0.93	E	-41	609	0.87	D	-5.86%	N	
McCarthy Boulevard	Barber Lane	EB	330	440	1,400	0.31	A	0	440	0.31	A	0.00%	N	
Barber Lane	McCarthy Boulevard	WB	257	330	1,400	0.24	A	0	330	0.24	A	0.00%	N	
McCarthy Boulevard	Murphy Ranch Road	WB	342	100	700	0.14	A	111	211	0.30	A	15.86%	N	

 Denotes Significant Benefit


 Denotes Significant Impact

Table 14
Year 2030 AM Peak-Hour LOS

Segment			Existing General Plan					Proposed GPA					
From	To	Dir	2004 Vol	Vol	Capacity	V/C	LOS	GPA Trips	Vol	V/C	LOS	% Inc	Impact?
Interstate 880													
Dixon Landing Road	Calaveras Boulevard	SB	5,700	12,500	11,000	1.14	F	-15	12,485	1.14	F	-0.14%	N
Calaveras Boulevard	Great Mall Parkway	SB	4,750	6,500	9,000	0.72	C	0	6,500	0.72	C	0.00%	N
Great Mall Parkway	Montague Expressway	SB	5,350	8,330	7,000	1.19	F	24	8,354	1.19	F	0.34%	N
Montague Expressway	Brokaw Road	SB	4,950	7,100	6,000	1.18	F	34	7,134	1.19	F	0.57%	N
Brokaw Road	Montague Expressway	NB	5,850	6,750	6,000	1.13	F	-24	6,726	1.12	F	-0.40%	N
Montague Expressway	Great Mall Parkway	NB	5,150	6,330	7,000	0.90	E	-16	6,314	0.90	E	-0.23%	N
Great Mall Parkway	Calaveras Boulevard	NB	3,920	6,700	7,000	0.96	E	0	6,700	0.96	E	0.00%	N
Calaveras Boulevard	Dixon Landing Road	NB	7,970	9,300	11,000	0.85	D	26	9,326	0.85	D	0.24%	N
State Route 237/Calaveras Blvd.													
N. First Street	Zanker Road	EB	4430	5870	6,000	0.98	E	-8	5,862	0.98	E	-0.13%	N
Zanker Road	I-880	EB	5310	6230	6,000	1.04	F	-8	6,222	1.04	F	-0.13%	N
I-880	Abbott Avenue	EB	1,270	1,580	4,000	0.40	A	37	1,617	0.40	A	0.93%	N
Abbott Avenue	Abel Avenue	EB	1,250	1,550	3,000	0.52	A	37	1,587	0.53	A	1.23%	N
Abel Avenue	Milpitas Boulevard	EB	1,370	1,400	2,000	0.70	C	25	1,425	0.71	C	1.25%	N
Milpitas Boulevard	Hillview Drive	EB	980	1,570	3,000	0.52	A	11	1,581	0.53	A	0.37%	N
Hillview Drive	I-680	EB	1,100	1,300	3,000	0.43	A	11	1,311	0.44	A	0.37%	N
I-680	Hillview Drive	WB	3,060	3,240	3,000	1.08	F	-25	3,215	1.07	F	-0.83%	N
Hillview Drive	Milpitas Boulevard	WB	2,460	2,710	2,500	1.08	F	-25	2,685	1.07	F	-1.00%	N
Milpitas Boulevard	Abel Street	WB	2,480	3,030	3,000	1.01	F	-33	2,997	1.00	E	-1.10%	N
Abel Street	Abbott Avenue	WB	3,060	3,300	3,000	1.10	F	-47	3,253	1.08	F	-1.57%	N
Abbott Avenue	I-880	WB	3,520	3,790	3,000	1.26	F	-47	3,743	1.25	F	-1.57%	N
I-880	Zanker Road	WB	3,970	7,300	6,000	1.22	F	56	7,356	1.23	F	0.93%	N
Zanker Road	North First Street	WB	5370	7980	6,000	1.33	F	56	8,036	1.34	F	0.93%	N
Montague Expressway													
Trimble Road	McCarthy Boulevard	EB	1,108	2,100	4,400	0.48	A	-15	2,085	0.47	A	-0.34%	N
McCarthy Boulevard	I-880	EB	622	1,750	4,400	0.40	A	24	1,774	0.40	A	0.55%	N
I-880	S. Main Street	EB	1,387	3,030	4,400	0.69	B	13	3,043	0.69	B	0.30%	N
S. Main Street	McCandless Drive	EB	1,268	2,570	4,400	0.58	A	13	2,583	0.59	A	0.30%	N
McCandless Drive	Great Mall Parkway	EB	646	1,200	4,400	0.27	A	13	1,213	0.28	A	0.30%	N
Great Mall Parkway	S. Milpitas Boulevard	EB	752	2,070	4,400	0.47	A	13	2,083	0.47	A	0.30%	N
S. Milpitas Boulevard	I-680	EB	424	1,700	4,400	0.39	A	13	1,713	0.39	A	0.30%	N
I-680	S. Milpitas Boulevard	WB	2,816	4,750	4,400	1.08	F	-8	4,742	1.08	F	-0.18%	N
S. Milpitas Boulevard	Great Mall Parkway	WB	2,400	4,550	4,400	1.03	F	-8	4,542	1.03	F	-0.18%	N
Great Mall Parkway	McCandless Drive	WB	2,306	4,220	4,400	0.96	E	-8	4,212	0.96	E	-0.18%	N
McCandless Drive	S. Main Street	WB	2,914	4,960	4,400	1.13	F	-8	4,952	1.13	F	-0.18%	N
S. Main Street	I-880	WB	3,339	5,630	4,400	1.28	F	-8	5,622	1.28	F	-0.18%	N
I-880	McCarthy Boulevard	WB	2,256	4,670	4,400	1.06	F	-16	4,654	1.06	F	-0.36%	N
McCarthy Boulevard	Trimble Road	WB	2,912	5,020	4,400	1.14	F	27	5,047	1.15	F	0.61%	N
Great Mall Parkway/Tasman Dr.													
Cisco Way	McCarthy Boulevard	EB	N/A	1,270	3,000	0.42	A	-2	1,268	0.42	A	-0.07%	N
McCarthy Boulevard	I-880	EB	238	900	3,000	0.30	A	49	949	0.32	A	1.63%	N
I-880	S. Abel Street	EB	317	1,000	3,000	0.33	A	25	1,025	0.34	A	0.83%	N
S. Abel Street	S. Main Street	EB	321	1,150	3,000	0.38	A	25	1,175	0.39	A	0.83%	N
S. Main Street	Montague Expressway	EB	433	1,550	3,000	0.52	A	25	1,575	0.53	A	0.83%	N
Montague Expressway	Trade Zone Boulevard	EB	318	1,040	3,000	0.35	A	25	1,065	0.36	A	0.83%	N
Trade Zone Boulevard	Montague Expressway	WB	928	2,000	3,000	0.67	B	-26	1,974	0.66	B	-0.87%	N
Montague Expressway	S. Main Street	WB	1,613	3,460	3,000	1.15	F	-26	3,434	1.14	F	-0.87%	N
S. Main Street	S. Abel Street	WB	1,473	3,130	3,000	1.04	F	-26	3,104	1.03	F	-0.87%	N
S. Abel Street	I-880	WB	2,032	3,750	3,000	1.25	F	-26	3,724	1.24	F	-0.87%	N
I-880	McCarthy Boulevard	WB	2,362	4,000	3,000	1.33	F	-42	3,958	1.32	F	-1.40%	N
McCarthy Boulevard	Cisco Way	WB	N/A	4,220	3,000	1.41	F	28	4,248	1.42	F	0.93%	N
McCarthy Boulevard													
Dixon Landing Road	Ranch Drive	SB	572	1,800	1,800	1.00	F	-8	1,792	1.00	E	-0.44%	N
Ranch Drive	Technology Drive	SB	800	1,700	2,700	0.63	B	-77	1,623	0.60	B	-2.85%	N
Technology Drive	Alder Drive	SB	969	1,350	1,800	0.75	C	-8	1,342	0.75	C	-0.44%	N
Alder Drive	Tasman Drive	SB	847	1,220	1,800	0.68	B	120	1,340	0.74	C	6.67%	N
Tasman Drive	Montague Expressway	SB	246	1,100	1,800	0.61	B	56	1,156	0.64	B	3.11%	N
Montague Expressway	Tasman Drive	NB	835	1,440	1,800	0.80	D	-29	1,411	0.78	C	-1.61%	N
Tasman Drive	Alder Drive	NB	369	1,080	1,800	0.60	B	-60	1,020	0.57	A	-3.33%	N
Alder Drive	Technology Drive	NB	374	950	1,800	0.53	A	13	963	0.54	A	0.72%	N
Technology Drive	Ranch Drive	NB	524	910	2,700	0.34	A	68	978	0.36	A	2.52%	N
Ranch Drive	Dixon Landing Road	NB	173	600	1,800	0.33	A	14	614	0.34	A	0.78%	N
Alder Drive													
McCarthy Boulevard	Tasman Drive	SB	930	1,140	1,400	0.81	D	-13	1,127	0.81	D	-0.93%	N
Tasman Drive	Barber Lane	SB	530	850	1,400	0.61	B	0	850	0.61	B	0.00%	N
Barber Lane	Tasman Drive	NB	387	660	1,400	0.47	A	0	660	0.47	A	0.00%	N
Tasman Drive	McCarthy Boulevard	NB	453	740	1,400	0.53	A	-13	727	0.52	A	-0.93%	N
Technology Drive/Bellew Drive													
Murphy Ranch Road	McCarthy Boulevard	EB	26	100	700	0.14	A	119	219	0.31	A	17.00%	N
McCarthy Boulevard	Barber Lane	EB	330	500	1,400	0.36	A	0	500	0.36	A	0.00%	N
Barber Lane	McCarthy Boulevard	WB	257	310	1,400	0.22	A	0	310	0.22	A	0.00%	N
McCarthy Boulevard	Murphy Ranch Road	WB	342	520	700	0.74	C	-69	451	0.64	B	-9.86%	N

Denotes Significant Benefit

Denotes Significant Impact

In the past, the City of Milpitas has required development projects that would contribute traffic on regional roadways such as Calaveras Boulevard and Montague Expressway contribute monetarily to planned improvements. For the planned Montague Expressway improvements, the City has adopted a fee program for properties located in the Milpitas Business Park. For the planned improvements to Calaveras Boulevard, the City does not have an adopted development fee program, but has been collecting new development contributions towards improvements as mitigation for significant impacts. Monetary contributions are typically calculated based on the number of project trips added to a roadway and the cost of the planned improvements. The proposed project would contribute traffic to Calaveras Boulevard and Montague Expressway, and therefore, would likely be required by the City to make “fair share” contributions towards the planned improvements.